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MEDICAL EDUCATION IN CANADA

ADVANCED GRADUATE TRAINING IN CANADA
THE ROLE OF THE ROYAL COLLEGE

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IT IS NOW 27 YEARS since The Royal College of Physicians and Surgeons of Canada was incorporated by an Act of the Canadian Parliament, following preliminary organizational work by the Canadian Medical Association.[1] The Fellowship has grown from the original group of 554 Charter members to 2018 at the present time. Those gaining Fellowship now do so almost exclusively by examination, the number admitted under other provisions of the College by-laws being very small. The College includes not only physicians and general surgeons, but also men trained in various allied medical and surgical specialties. The Fellowship examination is modified for 16 specialties at the present time, the latest addition being Physical Medicine and Rehabilitation.

In addition, since an amendment to its Charter in 1939, the College has been acting as a certifying body in Canada at the original invitation of the Canadian Medical Association. This invitation was issued to the Royal College as a national organization, because it was felt that uniform standards of qualification should be set up for all specialties in Canada.[2] The Royal College Specialist Certificate is accepted as adequate qualification for recognition as a specialist in most of the provinces of Canada, although not in all. At the present time 22 specialties are approved by the College for certification.

The development of this program of certification has led perhaps to some confusion as to the relative values of the qualifications of Fellowship and Certification. Certification in an approved specialty is intended to indicate that the physician so certificated has taken at least a required minimum training, and has demonstrated at the examinations that he has a satisfactory practical knowledge of his specialty. Certification does not admit the holder to Fellowship in the College, nor is it a degree. While the training programs required for Fellowship and Certification in any approved specialty are in most instances very similar, the standards required for admission to Fellowship are higher than those for Certification. Candidates at the Certification examination are required to demonstrate a sound knowledge of the general principles of medicine or surgery as the case may be, and of basic science appropriate to their specialty, and also to reveal a full technical knowledge of their specialty. Candidates for the Fellowship must display equal or greater clinical proficiency and have a greater appreciation and broader understanding of basic science and the fundamental principles of medicine or surgery.

There have been some who have contended that it is possible under the College regulations for a Certification candidate to take a longer training in his specialty and therefore be a better qualified specialist in his field than a man who has followed the required training program in preparation for the Fellowship examination modified for that specialty. The Council of the Royal College agree that a candidate may obtain longer specialty training under Certification regulations by substituting training in the specialty for the training in general medicine or surgery required for the Fellowship; however, they feel that the broader training

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required for the Fellowship and the higher standards demanded at the Fellowship examination mean that the successful candidate is indeed a better qualified specialist than the certificant.

The Royal College in Canada differs from some other Royal Colleges in laying down rather extensive minimum training requirements before candidates can be accepted for the examinations. In general terms, under present regulations in all specialties four years of approved training are required beyond the junior rotating or general internship. At least two of these four years must be spent in approved resident training in the specialty, while the other two years provide considerable variety of choice. Where the Fellowship examination is modified for an allied medical specialty, the candidate must include in his four-year advanced graduate training program at least one year of approved resident training in internal medicine; an analogous situation applies in surgery. There is some modification of this requirement in a few specialties where the specialty has both medical and surgical aspects, such as anæsthesia or ophthalmology.

In addition to actual training requirements the Credentials Committee before accepting a candidate for any examination must be assured of the satisfactory moral and ethical standing of the candidate and of his graduation from an acceptable medical school.

The regulations and requirements of graduate training relating to the examinations of the Royal College were revised and republished in 1956. The College Office will gladly supply copies of these regulations to all interested persons. Physicians and surgeons embarking on advanced graduate training programs in preparation for specialty work and who intend to qualify for the Royal College examinations are urged to obtain the regulations and study them carefully. Such a course may save errors in planning that would interfere with the acceptability of a training program at a later date when rectification of inadequacies could entail hardship.

The Credentials Committee of the College is the body whose responsibility it is to review applications for the examinations. To assist candidates-in-training they are also prepared to rule at any time on the acceptability of past training or of proposed future training. Candidates are urged to take advantage of this service in order to minimize the chances of errors in planning of graduate training. Candidates are also urged to be cautious about accepting advice from elsewhere, unless they have every confidence that their adviser is fully versed in the regulations and requirements of graduate training as laid down by the Royal College.

Physicians who plan to take the Certification examination in an approved specialty, but who feel they might wish to take the Fellowship examination at some future date, are urged to design their training program from the start to fulfil the Fellowship requirements. Such a Fellowship program in all instances also qualifies for Certification and the duration of training is the same. However, if the program fulfils only Certification standards and is deficient in Fellowship requirements, there is no way to qualify for the Fellowship examination in the future except by return to training to remedy the defect. This is a most difficult step to take once the physician has become established in practice.

The regulations and requirements of the Royal College do not include prescribing reading lists of textbooks or medical literature, nor do they include an analysis of the minimum content of required clinical experience during the period of resident training. It should also be pointed out at this stage that the requirements of the Royal College in regard to advanced graduate training are not necessarily the same as those of the specialty Boards in the United States. Candidates who may wish to take also the examinations of the American Board in their specialty should consult the regulations of that Board and prepare a training program which would satisfy the regulations of both the Board and the Royal College. Reciprocity does not exist between the certificate of the Royal College in Canada and the diploma of the analogous American Board, although possession of Canadian Royal College certification is accepted in lieu of the diploma of the appropriate American Board for membership by some American specialty societies.

While criticism might be heard from some quarters in regard to the lengthy training period required in preparation for the Royal College examinations, it is the feeling of the College that insistence over the years on such a program of acceptable training has been of real

A. FELLOWSHIP

(i) Fellowship in Medicine
(ii) Fellowship in Medicine, the examination being modified for:

- Anæsthesia
- Dermatology and Syphilology
- Neurology
- Pædiatrics
- Pathology
- Physical Medicine and Rehabilitation
- Psychiatry
- Diagnostic Radiology
- Therapeutic Radiology

(iii) Fellowship in General Surgery
(iv) Fellowship in Surgery, the examination being modified for:

- Neurosurgery
- Obstetrics and Gynæcology
- Ophthalmology
- Orthopædic Surgery
- Otolaryngology
- Plastic Surgery
- Urology

B. CERTIFICATION

Certification in the medical specialties of:

- Anæsthesia
- Bacteriology
- Dermatology
- Internal Medicine
- Neurology
- Pædiatrics
- Pathology
- Physical Medicine and Rehabilitation
- Psychiatry
- Public Health
- Diagnostic Radiology
- Therapeutic Radiology

Certification in the surgical specialties of:

- General Surgery
- Neurosurgery
- Obstetrics and/or Gynæcology
- Ophthalmology
- Orthopædic Surgery
- Otolaryngology
- Plastic Surgery
- Thoracic Surgery
- Urology

help in raising the standards of medical practice in Canada.

Shown above is a list of the present Fellowship and Certification examinations as approved by the Council of the Royal College. The examinations are conducted once a year both in the English and in the French language.

To ensure that advanced graduate training in Canada is carried out in properly qualified hospitals and institutions, the Royal College conducts a program of approval of hospitals. The Credentials Committee is empowered to accept training in Canada only when this is taken in such approved hospitals. It is essential therefore that a candidate-in-training for Royal College examinations be sure in advance that any senior internship or residency that he proposes to accept is approved by the Royal College for advanced graduate training in the specialty. Lists of hospitals approved in Canada for advanced graduate training may be obtained from the Royal College office.

The Credentials Committee can accept resident training taken outside Canada where it has been approved by an acceptable authority. In the United States such training must be taken in hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association. Acceptable hospital training in Great Britain must be approved by one of the higher examining bodies there. Training may also be accepted where it is included in a university or other training organization which is approved as a whole by the Royal College in Canada.

The comments of the last two paragraphs will explain what is meant by the term "approved resident training" as used in earlier paragraphs of this discussion. The Royal College program of hospital approval for advanced graduate training is conducted by a Committee on Approval of Hospitals. The program is still relatively young and is under continued study. Basic requirements of a hospital to obtain approval were published in 1947 and have not been amended up to the present time. Minimum requirements of a hospital department to obtain approval have not been determined for all specialties but a start in this regard has been made for a few. In addition to such "basic requirements" the Committee on Approval of Hospitals must assess the general suitability for and interest in advanced graduate training of the hospital in question. It is proper to say that increasing stress is being laid on integration of advanced graduate training into formal university training programs in the specialty.

Approval may be granted to hospitals for a training period in a specialty ranging from four months to four years. The duration of the approved training period naturally varies with

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the training facilities of the institution. Approval may be granted for a four-month period of training in a specialty where that training forms a portion of a year in the specialty, the remaining time being spent in an institution with approval for at least one year in the field. Inclusion in a training plan of such a hospital with an approval for four months may be justified in order to utilize unusual or more specialized clinical material peculiar to the institution. Approvals for longer periods of time are granted to hospitals with broader and greater training facilities. Approvals are subject to periodic review.

While it is possible under present regulations for a candidate to fulfil the "letter of the law" in training requirements by a series of appointments at hospitals with limited approval (for example, one year), this practice is deplored by the Council of the College. Such a training program is almost sure to be lacking in graduated responsibility and intensive teaching and thereby produce a less competent practitioner with less chance of success at the examinations. Some consideration is being given to modifying the regulations to require that at least two years of training be taken at institutions with full approval for training in the specialty.

It is of importance to differentiate the approval granted by the Royal College for advanced graduate training from "hospital accreditation" as issued by the Joint Commission on Accreditation of Hospitals (American) or the Canadian Commission on Hospital Accreditation, and also to realize that approval of hospitals in Canada for junior rotating or general internships is a prerogative of the Canadian Medical Association and not under the direction of the Royal College. This is stressed because occasionally candidates and even administrators are encountered who have been under the misapprehension that advanced graduate specialty training would be approved because the hospital had full accreditation from the Canadian or American Commission.

Training in Canada taken in hospitals approved by other Colleges or certifying bodies will not necessarily be accepted by the Credentials Committee of the Royal College.

In recent years, the Council has adopted the principle that a general hospital, to be approved by the College for advanced graduate training, must have provisional or full accreditation by the Canadian or American Commission on Hospital Accreditation and must also be approved by the Canadian Medical Association for junior internship training.

The Royal College has limited its activities in the field of graduate education to the setting forth of standards for acceptable advanced graduate training and providing the machinery for granting specialist standing in medicine, general surgery, and the approved specialties. This has involved the various activities as discussed above. So far the College has not entered the field of formal postgraduate teaching either on its own or through sponsorship of approved graduate teaching courses. The College offers annually an award in medicine and an award in surgery for original work, either clinical or basic research. The Council strives to make the program of the Annual Meeting of the College of as high a standard and appeal as possible. There is a healthy interest in College activities both in the Council and in the Fellowship at large, and there is ample reason to believe that the Royal College will grow with Canada, not only in size but also in scope of activities.

REFERENCES

1. ROUTLEY, T. C.: *Canad. M. A. J.*, 73: 102, 1955.
2. PATCH, F. S.: *Ibid.*, 51: 261, 1944.

THE CRISIS IN A MEDICAL CAREER

But the really crucial period for the medical student comes at the very end of his preparatory experience. What decides the rest of his professional life is what he does after the internship or the residency is over. He then decides whether to stay in teaching and research or to leave it. He then considers offers from group clinics or older doctors who want a competent assistant. He then decides for or against permanent government service. At this point he has the offer or the desire to go to a community that needs a doctor. In short, at this point the die is cast. And I would add that I know of no money more effectively invested for the advantage of great Medicine than funds made available to medical schools to pay adequate salaries to hold the best qualified young men, at this stage, to careers in research and teaching. I could not possibly exaggerate the value of such assistance at this time.—Alan Gregg: Challenges to Contemporary Medicine, Columbia University Press, New York, 1956, p. 113.

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GRADUATE PSYCHIATRIC EDUCATION IN CANADA

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THIS paper deals with the development and present status of postgraduate psychiatric education in Canada. Education of this type is a relatively recent innovation and is still very much in a state of flux, since efforts are being made to work out a system of education which will be valuable for those being educated while at the same time meeting some of the demands of those who have to give service to the Canadian people in the psychiatric field.

HISTORY OF CANADIAN PSYCHIATRIC TEACHING

As far as I can gather, the earliest attempt at postgraduate psychiatric education in Canada was that conducted by Dr. A. T. Mathers in the psychopathic division of the Winnipeg General Hospital. This was followed in 1925 by the opening of the Toronto Psychiatric Hospital which received its first patients in that year. Following this, an occasional member of staff of one of the Ontario hospitals was sent away for a period of graduate training, but a formal course of graduate instruction did not begin until January 1931. At that time, the course was listed in the calendar of Toronto University in postgraduate psychiatry and this course has been given continuously since.

Over the next 10 to 15 years, there were sporadic attempts at postgraduate education in Canada at various centres such as Toronto, McGill and Dalhousie, giving a partial sort of training. The first attempt to systematize this and set some sort of standards in psychiatric training was made when the Royal College interested itself in the matter and took over the certification of specialists in the various fields of medicine and surgery in the early 1940's. The next step in the development of graduate training occurred a few years later when Dr. Ewen Cameron assumed the Professorship of Psychiatry at McGill University, and the Allan Memorial Institute was opened as an integral part of the Royal Victoria Hospital in Montreal. Graduate training remained in a haphazard state for the next five or six years, certain university and provincial hospitals being rated by the Royal College of Physicians and Surgeons as suitable for a variable period of time of training in the specialty. With the announcement of the mental health grants in 1948, however, all of the university departments of psychiatry were strengthened and began to consider the problems of postgraduate training. The Committee on Psychiatry of the Royal College of Physicians and Surgeons of Canada was strengthened, and more formal requirements for the approval of hospitals and for the training of candidates for the certification and fellowship examinations were drawn up. At this time, the training programs were extended in the postgraduate field at McGill University and the University of Toronto, and other universities such as Dalhousie, Laval and the University of Western Ontario took their first steps in the development of an approved program of graduate training in psychiatry.

Because of the unevenness of training facilities across Canada, the Committee on Psychiatry of the Royal College of Physicians and Surgeons of Canada formulated a new scheme of training which has gradually been implemented over the intervening years. The basis of this new scheme lay in the idea that psychiatrists should have a very broad training in the many areas in which they were being called upon to work in the modern world. It was felt that no longer was an apprenticeship type of training in a mental hospital suitable for the embryo psychiatrist. He should have, in addition to the training in the psychoses which the mental hospital could offer, a broad training in many other fields, including the neuroses in outpatient practice, the many aspects of psychiatry met with on the wards of a general hospital, the child guidance clinic and many other community resources. As well as these clinical experiences, he should have teaching in a broad variety of basic sciences, such as psychology, neurophysiology, sociology, neuroanatomy and many others. Because of the necessity for broad academic and clinical experience, it was felt that no one institution could be responsible for a total psychiatric program. Rather it seemed necessary to have one supervisory and organizing agency which would be responsible for psychiatric training programs in a particular geographical area, while the other facilities covering certain aspects of psychiatric training would align themselves under the

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special sponsoring agency. It seemed proper that the universities should be primarily concerned with this organization of psychiatric training, and that other institutions which wished to participate in the training program should seek affiliation with the nearest university offering such a program. Thus the aim was achieved of organizing psychiatric postgraduate programs around the universities of Canada, with each university with a postgraduate training program taking on the responsibility of organizing the psychiatric facilities in its area so as to provide a broadly based teaching program. Within a year or so of the announcement of the mental health grants, programs were established and approved by the Royal College of Physicians and Surgeons at Dalhousie University, Laval University, McGill University, the University of Toronto, the University of Western Ontario and the University of Manitoba. Other agencies in the various areas served by these universities, such as the provincial hospitals, children's hospitals and child guidance clinics, affiliated themselves with the university training scheme and thus gained acceptance by the Royal College of the training received in these institutions.

Because of the paucity of university training schemes in many areas of Canada, especially the West, some of the Royal College regulations were left rather vague, and this has since caused considerable trouble in interpretation. At the present moment, however, there has been a considerable expansion of university departments of psychiatry in Canada. Within the past few years, the University of Saskatchewan has organized an active department which has already started to train postgraduate students in psychiatry; the University of British Columbia has an undergraduate psychiatric program under way and hopes in the immediate future to go further into the graduate field, and the University of Alberta has recently appointed a new professor. With his arrival, it is expected that postgraduate training programs will be available in this area as well.

THE PRESENT SITUATION

With the emergence of these bodies, which are primarily interested in education in all parts of Canada, one of the immediate tasks in postgraduate psychiatric education is to clarify the requirements for training schemes and for hospitals approved for teaching. At present, there is a considerable muddle between the old system and the new and it is very difficult to get definitive information on just what is required and just what will be permitted in fields of psychiatric training. Broadly speaking, the present requirements are as follows: (1) the candidate must have graduated from an acceptable medical school, and must have had a one-year rotating internship in an accepted hospital; (2) following his one-year rotating internship, he must have four years of approved postgraduate training, and he is advised to have these four years in an organized university training scheme.[2]

The current practice in Canada is to have the candidate spend two of these four years in a training scheme in the university centre which is organized primarily for teaching. Here, he will receive not only an apprenticeship type of training but also a great deal of individual supervision and an organized teaching program consisting of lectures, journal clubs, seminars, and so on. The other two years are usually spent in clinical facilities provided by a variety of agencies—for example, the provincial government, the municipality, and private clinics. But these institutions are generally approved by the university and under the university's ægis—that is, the university supervises the training program which is being provided for the psychiatric trainee and holds itself primarily responsible for the teaching going on in that institution. At the conclusion of these four years of training, the individual is qualified to sit his certificate examination in psychiatry. There are a number of other schemes which would be considered for these second two years of training such as working in a basic science department, or psychiatric practice under the supervision of a certified psychiatrist, but in general the scheme outlined above is the one ordinarily followed.

In other words, to come to the point of the certification examination in psychiatry requires generally four years following a rotating internship, two of these years spent in a university centre and two years in a variety of settings organized for teaching under university ægis. The requirements for the fellowship examination in medicine as modified for psychiatry are not fundamentally different from those stated above. The main difference is that one of the four years for the fellowship must be spent on a medical service, presumably dealing with psychosomatic problems. This means, however,

that the candidate for the fellowship may spend three years in psychiatric training and one year in medical training and may actually come for his fellowship examination with less actual psychiatric training than the person who comes for his certification. To many psychiatric educators in Canada, this seems an illogical position and there is a considerable feeling that it should be re-examined and changed. There are a number of other problems regarding the set-up of teaching in Canada at the present moment and there is a considerable need for the Royal College to examine critically the requirements for psychiatric certification and fellowship examinations and at the same time scrutinize the various training areas to see if they are doing their job adequately.

As I have indicated above, in the last three or four years a number of centres have progressed to the point where they are either taking or are almost ready to take postgraduate students—foremost among these being the Universities of Alberta and British Columbia, Queen's University and the University of Ottawa. It would seem then that in the very near future the universities will have so organized themselves as to be capable of dealing with problems of psychiatric training in any part of Canada. One might suggest that since the universities generally have been found the most effective teaching body that we have, they continue to be given the responsibility for training programs in psychiatry.

To turn then to the specific situation in Canada at the moment, postgraduate psychiatric training is very largely organized under university auspices straight across the country. An individual wishing to obtain such training would probably be well advised to discuss it with representatives of the department of psychiatry at the university in the area in which he wishes to train. It is my impression that applicants for psychiatric training are a good deal fewer than they were a few years ago. This probably reflects the same trend that is seen in medical school applications, and probably has to do with the swollen numbers up to a few years ago resulting from returning veterans. It may well also have to do with the fact that, despite very severe shortages in many areas in psychiatry, some areas are becoming fairly heavily staffed so that this particular specialty may not be as attractive as it was five years ago. Available training areas have increased quite considerably during this period. At any rate, I think the result is that any qualified individual who wishes training in psychiatry will be able to find an opportunity which meets his needs in one of the Canadian universities. In most such universities, his training experience will be arranged as outlined above—that is, there will be a division into two years in an intensive university teaching course and two years in some service setting with the training side of the setting supervised by the university in which he is registered. The exact details of his work during this four-year period will vary from area to area and will also vary according to the individual's needs, his past experience, and his future plans. One candidate, for example, may wish to go later into child psychiatry and it is probable that the training area will allow him a little extra experience in this field. Someone else may want to practise psychiatry in a general hospital and will have a little more opportunity to see this side of things. On the other hand, if an individual is going to work for a good part of his life in a provincial hospital setting, it may well be that his training plans should include a considerable amount of general hospital and community experience, since he may not have the opportunity for this sort of thing later on. In my judgment, there are about 150 approved psychiatric residencies across Canada. At the completion of his four years of training, the individual will be qualified to sit his certification examination of the Royal College of Physicians and Surgeons of Canada, or, if he has spent some time in internal medicine, the fellowship examination of the same body.

FINANCIAL AID

A candidate will naturally be interested in what financial help he can get during this four-year training period. By and large I think that psychiatry is fortunate in being able to offer more than most of the other specialties can. As a result of the mental health grants, nearly all of the provincial departments of health have training bursaries available and, since most of them are very short of psychiatrists, they are willing to provide funds during this training period. The usual stipend from such a bursary is $200 a month for an unmarried man and $250 a month for a married man. Some of the departments of health across the country also offer additional funds in order to attract candidates to their

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service, and by and large there seems to be a considerable bidding against each other, so that most people wanting psychiatric training are able to get reasonable financial support during this period. There are, of course, always pipers to be paid and the different provincial departments of health ask for different returns in terms of future service. The candidate will be asked to bind himself to work for the provincial government for a certain period of time following his training. This period varies from province to province but by and large it is not a very great burden for the candidate to assume, since a good part of it is worked off during the training period. As well as these provincial government bursaries, there is usually the possibility of financial support from other areas if for some reason the candidate does not wish to accept help from the provincial government service. It is also of course entirely permissible in all training schemes for the individual to support himself and thus be a completely free agent at the end of his training if he so desires.

POSTGRADUATE DEGREES

Most Canadian universities also offer some sort of postgraduate degree in psychiatry—for example, a diploma or a master of science. This usually requires added work with the university and the production of a thesis and appears to me to have little meaning if the person has his Royal College certification.

SPECIALIZED AREA

The specialized areas in psychiatry have been rather poorly developed in Canada up to the moment. Two years ago, Dr. Clifford Scott joined the psychiatric staff of McGill University and has organized a training program in psychoanalysis in conjunction with the Department of Psychiatry at McGill. The uniqueness of this step may perhaps not be appreciated by non-psychiatric physicians, but to a very considerable extent psychoanalytic training in England and in the United States has been separated from the university and carried out in special institutes. One or two attempts at this sort of thing have been made in the United States, but the development of this type of training in connection with a Canadian university is certainly a progressive and worthwhile step which merits the interested observation of all of us.

In the important field of child psychiatry, there is still little in Canada in the nature of complete training. Most of the centres have people with special training in child psychiatry and it is possible for a student to get special experience in this field, but I think all of these centres are in the developmental phase and none of them as yet is equipped to give complete training in this specialty. In the other special areas of psychiatry, such as medico-legal work, delinquency, and industrial psychiatry, there is little formal development. Again, most of the teaching centres can arrange for the student to have special experience in these fields, but this is unorganized and not to be recommended for formal training.

GENERAL PATTERN OF TRAINING

To sum all this up then, Canadian psychiatric training as at present organized is broadly based and designed to give the student an adequate training for the practice of general psychiatry. Specialty fields are as yet very poorly developed, and if the student does wish to specialize within the framework of general psychiatry, he will almost have to go to special clinics in the United States or England. As indicated, Canadian psychiatric training is almost entirely organized under university auspices and this seems to many people to be a very advantageous arrangement. It is in contrast to the situation in the United States where individual hospitals are approved for a certain period of training, and it is in contrast to the arrangement in the other specialties in Canada for postgraduate work. We have, however, progressed to the point where we feel that the apprenticeship system is not adequate for undergraduate medical teaching and we now insist that such teaching include an internship under the direction of a body primarily concerned with education. If this is so at the undergraduate and internship level, it surely is equally so at the postgraduate level. I have heard a considerable amount of envious comment on this arrangement from prominent psychiatric teachers in the United States and from teachers in other areas of medicine in Canada. This plan has aided graduate education in psychiatry to develop to a very high level and it is a pattern which should be encouraged in the future and can well be recommended in other areas of

medical training. This is perhaps one of the distinctive contributions of Canadian psychiatry.

OPPORTUNITIES AFTER TRAINING

After psychiatric training, the newly qualified psychiatrist will find a huge variety of opportunities waiting for him. These may lie in a variety of fields—private practice, federal services, provincial services, municipal services, teaching posts. To survey these briefly:

1. *Private practice.*—I know of only one city in Canada said to be surfeited with private psychiatrists. Even in this city, well-informed opinion doubts if this is so. Certainly, in terms of the job to be done there is no area in Canada which offers enough psychiatric help, though it may be that in terms of the ability of the public to pay private fees for psychiatry, a surfeit may be reached. Be that as it may, all across this Dominion there are towns of 25,000 to 50,000 people with a reasonable countryside around them which I am sure could provide a reasonable and interesting private practice in psychiatry. In my experience, any psychiatrist settling in such an area does not have to wait long before his time is completely filled up.[3] In most areas, it will also be possible to make a working arrangement with some government agency whereby a certain proportion of the person's time is taken up in clinical practice. Such an arrangement might be running a part-time mental health clinic, it might be serving as psychiatrist to an adjacent institution such as a penitentiary, it might be serving as a psychiatrist to the city health authorities or many other things, but I do believe that it offers a very reasonable way of getting started in the practice of psychiatry.

I think that an arrangement of this sort is most advisable, not only financially but also because many people will present themselves to a private psychiatrist who badly need help but who cannot afford help in the usual way. Such a situation is particularly apt to occur in psychiatry, since so many of the prepaid medical and hospitalization schemes still refuse to pay for psychiatric care or hospitalization. If one does not have some sort of clinic facilities available, almost certainly one will soon become loaded with a group of patients who take up a great deal of time and, through no fault of their own, cannot pay reasonable fees for this service. This provides a very, very difficult problem for the psychiatrist. I believe it can only be solved if there is the possibility of treatment in some sort of reduced-fee clinic.

2. *Provincial services.*—One of the most alarming things to all people in mental health in Canada in the past 10 years has been the difficulty of attracting and keeping people in the mental health services of the provincial governments. There is scarcely a provincial hospital across Canada with an adequate staff and, in nearly every province, plans for development of new treatment resources in terms of clinics or hospitals are held up because of lack of personnel. By and large, jobs in the provincial service pay a reasonable salary today with a considerable amount of fringe benefits and offer an attractive career. It does seem, however, that many personnel difficulties will have to be overcome if provincial services are to be built to the point which everyone would like to see, and there is the need for careful scrutiny of personnel practices to make these attractive jobs for a young well-trained psychiatrist. I believe that the working out of joint appointments, which would allow the physician on the mental hospital staff to have some outside interest in community clinics or university teaching, would be a very valuable step in this direction.

3. There are many other areas asking for psychiatric help at the present moment. Institutions such as the Department of Justice have been anxious to secure psychiatric help for their penitentiary and other legal institutions. A great many school authorities want psychiatric help and there is a wide diversification of opportunity for the young psychiatrist.

There are, thus, ample opportunities in psychiatric practice for a rewarding life, both financially and in terms of real satisfaction from work. It should be pointed out, however, that there are real problems in psychiatric economics which have not yet been solved. Recent studies[4] have shown that the specialty of psychiatry is still second from the bottom in terms of earnings. This very largely has to do with the nature of psychiatric practice, which depends so much on time spent with the individual patient. Psychiatric patients are very often excluded from the benefits of prepaid medicine and prepaid hospital schemes, and it thus becomes impossible for them to take on even modest psychiatric bills. There is need for careful study of the whole economic structure

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of psychiatry, remembering that the history of psychiatry has been rather the reverse of the rest of medicine. Most specialties in medicine have started out as private enterprise and are now struggling to prevent themselves from being taken over as government services. Most psychiatry began as a government service and it is only in the past 20 years that it has emerged as a healthy area of private practice. There is a need for continued vigilance, so that regression does not take place to a completely government-dependent service again.

REFERENCES

1. FARRAR, C. B.: Personal communication.
2. Royal College of Physicians and Surgeons of Canada: Regulations and requirements of graduate training relating to the examinations of the Royal College of Physicians and Surgeons of Canada, Medicine and Medical Specialties, May 1956, p. 36.
3. JONES, R. O.: *Am. J. Psychiat.*, 106: 69, 1949.
4. DAVIDSON, H.: *Ibid.*, 113: 41, 1956.

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A SURVEY

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IN HIS ESSAY "Medical Research", prepared for the Massey Commission,[1] Dean Ettinger observed that medical research in Canada really began on a national basis with the discovery of insulin. He pointed out: "Prior to 1921 little serious work was done in Canadian medical schools, although good teachers mostly of British origin were training and stimulating young biochemists and physiologists at the University of Toronto, McGill University, the University of Manitoba and the University of Western Ontario. Had this not been so, had there not been little groups of ardent young scientists in our medical laboratories at the time Banting commenced his experiments, there could not have been the excellent team work which produced insulin, and the explosive force of its discovery would have provoked no echoes in Canadian laboratories beyond the City of Toronto."

But it is apparent that the explosive force did have its echoes and that the discovery of insulin started a chain reaction of enthusiasm in medical research which has expanded with increasing intensity to its present status.

At the outset, as a dedicated research worker, Banting was intent only upon the purely humanitarian benefits to be gained and he made his discovery his gift to humanity. Whatever available royalties accrued from the sale of insulin were devoted by him and his colleagues, Best and Collip, to the maintenance of the research programs in their respective laboratories at their medical schools.

From this beginning, medical research progressed mainly in the universities, sustained partly by their own resources but with some financial support from outside agencies both in Canada and the United States. To supplement benefactions derived locally, the Rockefeller Foundation, among other U.S. agencies, made generous gifts to Canadian medical schools in terms of research fellowships and cash grants, which enabled the expansion of medical research facilities. With this, a natural increase in research activities occurred. The first federal financial support, amounting to some $53,000, was offered in 1938 through the establishment of the Associate Committee on Medical Research of the National Research Council, with Sir Frederick Banting as chairman.

Soon afterwards, World War II provided a potent if unwelcome stimulus to the progress of medical research in Canada, though chiefly in respect to health problems as related to the war. Supplementing its existing Associate Committee, the National Research Council established three special committees to deal with Naval, Army and Aviation Medical Research. Ettinger notes that each of these studied problems related to the comfort, safety, protection, clothing and nutrition of the particular service for which it was created. There was little opportunity for fundamental studies, since the medical problems in wartime called chiefly for applied research.

The return of peace saw the resumption of normal research activities in the universities and exciting developments in federal and provincial

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governments. In 1946 the National Research Council dissolved its four medical research committees and created a Division of Medical Research, with an Advisory Committee on Medical Research replacing the original Associate Committee. The Department of National Defence established the Defence Research Board which, through its Medical Section, focused its research interests upon problems having specific relation to health and its maintenance in the Armed Services.

In 1948, the Health Grants Program of the Department of National Health and Welfare came into being and included a grant for public health research. The impetus given to the development of services through funds made available in special health areas quickly pointed up the need for stimulating and supporting research in these fields. Accordingly, grants-in-aid were offered to assist research in mental health, tuberculosis control, cancer control, child and maternal health, and crippling conditions in children, leaving the public health research grant for the investigation of public health problems not related to any specific grant.

In 1950, the Department of Veterans Affairs organized a program of research in its hospitals and clinics across Canada. As in the case of the other bodies sponsoring research, a progressive increase in demand for assistance has attended its development. Within the past ten years also, a number of voluntary health agencies have come into being. These include among their principal objectives the encouragement and support of research in their respective areas. Among them are the National Cancer Institute (which at the time of its inception entered into close collaboration with the pre-existing Canadian Cancer Society), the Canadian Arthritis and Rheumatism Society, and, more recently, the National Heart Foundation of Canada. At provincial levels, the Ontario Cancer Treatment and Research Foundation, the Ontario Heart Foundation, the British Columbia Medical Research Institute and others have entered the picture. There are also, of course, those foundations which have broader research interests, but whose programs include support of health research. These include the Atkinson and Bickell Foundations, the Canadian Life Insurance Officers Association and a number of others such as the Muscular Dystrophy Association having a specific disease or defect as their singular interest.

THE PRESENT POSITION

Thus, with a number of official, and semi-official and voluntary bodies launching research programs, a remarkable surge forward has occurred in the total medical research effort. The curve plotting the availability of funds for research since the earliest days, while initially rather flat and unimpressive, has taken a dramatic upward swing during the past decade. It is with the purpose of examining this trend and determining the present status of medical research in Canada that this review has been undertaken. In particular, specific attention will be directed to two more material aspects, the amount of research funds and their sources, and the areas of study to which these are broadly applied.

The data included in this survey were obtained primarily from the Reference List of Medical Research Projects in Canada,[2] but, in addition, from Ettinger's essay, government reports, correspondence with the sponsoring agencies concerned, and an earlier study of this subject.[3] To conserve space a full listing of individual sources of support has not been prepared, but such information is generally available through the universities or government agencies. For convenience, the financing of medical research may be grouped in five broad categories—government, university, voluntary, commercial and foreign. There is no single source of information of this type and, apart from reports of the official agencies and voluntary organizations, the figures are fragmentary and incomplete, particularly as far

TABLE I.—FUNDS AVAILABLE FOR MEDICAL RESEARCH PROJECTS AND FELLOWSHIPS IN CANADA, ALL SOURCES, 1955-56

Federal Government	
Grants and Fellowships	
National Research Council	$ 725,000
Defence Research Board	415,000
Department of Veterans Affairs	360,000
Department of National Health and Welfare*	1,785,000
Intramural Research—all Departments	1,170,000
Provincial Governments†‡	345,000
Universities	1,350,000
Voluntary Agencies	845,000
Commercial	1,600,000
Foreign (Grants from U.S.A.)	
Government	95,000
Voluntary Agencies	500,000
Total	$9,190,000

*Includes federal contribution to National Cancer Institute.
†Provincial funds directly or indirectly involved.
‡Includes provincial contribution to National Cancer Institute.

TABLE II.—FUNDS AVAILABLE FOR MEDICAL RESEARCH IN CANADA, ALL SOURCES, 1949-50, 1952-53 AND 1955-56

Agency	*1949-50*	*1952-53*	*1955-56*
Governments			
Federal (grants and fellowships)*	$1,210,000	$2,900,000	$3,285,000
Federal (intramural)	110,000	1,060,000	1,170,000
Provincial (grants)*	155,000	190,000	345,000
Universities (local funds)	600,000	1,050,000	1,350,000
Voluntary bodies (grants)	225,000	700,000	845,000
Commercial (intramural, grants and fellowships)	750,000	950,000	1,600,000
Foreign (grants from U.S.A.)	210,000	420,000	595,000
Total	$3,260,000	$7,270,000	$9,190,000

*Includes grants to National Cancer Institute.

as the "early years" are concerned. However, Table I presents the information gathered for this study, relative to available research funds and their sources, under the five broad categories specified. While there are undoubtedly other contributing agencies not included, it is apparent that well over $9,000,000 was offered in support of medical research in Canada for 1955-56. It should be noted that the intervals for each group are not strictly comparable, but, in greater part, correspond with the calendar year 1955. The government bodies, obviously, are related to the federal fiscal year extending from April 1, 1955, to March 31, 1956.

An attempt to obtain similar data relating to the earlier years disclosed that information as to total funds available before 1949 is too fragmentary to justify valid comparisons. Therefore, data on financial assistance from all sources during selected recent years are presented in Table II. It will be noted there was an increase of almost 125% between 1949 and 1952, applicable in varying proportions to all supporting agencies; during the succeeding three years the increase amounted to 25%. Because of the incompleteness in the figures for 1949-50 the contrast in these percentage increases may not be as pronounced as would appear at first sight.

In addition to grants-in-aid and research fellowships, the figures include expenditures in those installations maintained by departments of government, such as the Laboratories of Hygiene and Food and Drugs Divisions of the Department of National Health and Welfare, and those of the Defence Research Board. These are quite significant, and while they cannot be expressed as moneys available to researchers, as in the case of grants-in-aid, the results of the studies being conducted under these auspices contribute to the general fund of medical knowledge and thus complement the efforts of those workers in the universities and independent research institutions.

The research program of the Department of Veterans Affairs has been included in Tables I and II with the federal government grants and fellowships. While the research is performed almost exclusively in veterans' hospitals and thus might be considered as "intramural" in character, the program is so organized that it closely resembles those of the other granting bodies and thus, for purposes of this review, is identified with them.

As an indication of the trend of expenditures for medical research over recent years, a summation of annual research grants made by the

TABLE III.—GRANTS-IN-AID AND RESEARCH FELLOWSHIPS AVAILABLE THROUGH SELECTED SPONSORING AGENCIES FOR MEDICAL RESEARCH, CANADA, 1946-47 TO 1955-56

	National Research Council		*National Health and Welfare*	*National Cancer Institute*	
	Grants	*Fellowships*	*Grants*	*Grants*	*Fellowships*
1946-47	183,000	23,200			
1947-48	286,000	41,900		84,000	3,400
1948-49	309,000	66,100	207,000	155,000	14,100
1949-50	437,000	86,500	446,000	276,000	13,900
1950-51	449,000	66,500	863,000	309,000	35,000
1951-52	440,000	76,500	1,112,000	295,000	36,200
1952-53	569,000	78,000	1,455,000	309,000	50,600
1953-54	574,000	60,500	1,840,000	326,000	52,700
1954-55	599,000	80,500	1,760,000	395,000	64,100
1955-56	647,000	77,800	1,785,000	458,000	68,900

National Research Council, the Department of National Health and Welfare and the National Cancer Institute is presented in Table III. Expenditures for research fellowships by the National Research Council and the National Cancer Institute are also recorded. The figures for National Health and Welfare represent total allocations for research including the annual contribution to the National Cancer Institute, from the cancer control grant, in excess of $100,000 per annum. So too, total expenditures for the National Cancer Institute are recorded and include funds derived from the Canadian Cancer Society, as well as the federal and provincial matching contributions. These three examples have been presented as typifying the general situation in Canada.

PURPOSES OF RESEARCH GRANTS

Turning to the purposes for which research funds are expended, the recognized areas of interest of the various sponsoring agencies merit initial attention. Among the government bodies, the National Research Council is primarily concerned with research of a fundamental nature involving the basic medical sciences—anatomy, biochemistry, bacteriology, endocrinology, experimental pathology, histology, metabolism, nutrition, pharmacology and physiology. It has been estimated that about 40% of the research funds are used in projects related to the cardiovascular system. Approximately 20% of the program is clinical in nature, involving patients or patients' products.

The National Research Council also supports a program of research fellowships designed solely for training in research, not for providing opportunities for clinical experience. Junior and senior research fellowships have been offered for a number of years and, of recent date, a new category of medical research associateships has been added, providing for continuing careers in medical research at a suitable level of remuneration.

Under the Medical Section of the Defence Research Board research interests are indicated by the titles of the 15 Advisory Panels so far established. These include: antibiotics, arctic medical research, auditory problems, aviation medicine, blood transfusion, coagulants and anticoagulants, food technology, infection and immunity, burns and wounds, nutrition, psychiatry, radiation protection and treatment, shock and plasma expanders, toxicology, and visual problems. The studies supported involve chiefly such basic disciplines as physiology and bacteriology, but also include clinical investigations.

The Department of Veterans Affairs is committed mainly to clinical research directed to aid the veteran, conducted almost exclusively in D.V.A. hospitals. Emphasis is placed upon problems of aging people and the aging process. In this broad area the study of hypertension, atherosclerosis and pulmonary diseases takes precedence and a special effort is being expended on the problem of staphylococcal infections.

Under the Health Grants Program of the Department of National Health and Welfare, substantial amounts of funds for research are available from six of the health grants. Public health research grant projects are related to public health administration and laboratory problems, bacteriology, immunology, epidemiology, and arthritis and rheumatism. Some fundamental biochemical research is also supported. Psychiatric research is assisted under the mental health grant and includes psychiatric and psychological studies together with some basic neurological investigations. In the field of tuberculosis, studies on the tubercle bacillus, BCG and antibiotic therapy of tuberculosis are stimulated by funds from the tuberculosis control grant. Under the child and maternal health and crippled children's grants, support is provided for the investigation of maternal and child (mainly infant) health problems. Research in cardio-vascular-renal diseases, hypersensitivity and ophthalmological problems is aided by funds from the general public health grant, and fundamental cancer research carried on under the auspices of the National Cancer Institute receives assistance from the grant for cancer control.

It would be superfluous to elaborate on the programs of other agencies sponsoring research since, in the main, their specific areas of interest are indicated by the title of the respective organizations.

PATTERNS OF FINANCING

In general, the pattern followed by the four government and most other agencies is a system of annual grants-in-aid. In the case of the National Research Council, some 70% of its funds are provided in this manner, the remainder as consolidated research grants. As noted by Dean

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TABLE IV.—SUMMARY AND COMPARISON OF MEDICAL RESEARCH TECHNIQUES EMPLOYED, CANADA, 1952-53 AND 1955-56

Research technique	1952-53 projects Number	Percent	1955-56 projects Number	Percent
Clinical	133	28.4	176	28.4
Laboratory	253	53.9	399	64.4
Animal experimentation	65	13.9		
Review of data	2	0.4	16	2.5
Statistical	7	1.5		
Field survey	9	1.9	29	4.7
Total	469	100.0	620	100.0

Ettinger, when a laboratory or institution has established a program of high quality and is recognized as a centre for training in research, and the reputations of its director and his staff are firmly established in the scientific world, it may be assisted by a consolidated research grant rather than by a group of grants-in-aid. The amount of this grant is fixed and recurs annually —assuming, of course, no decrease in the budget for medical research.

To supplement its ordinary grants-in-aid, the Defence Research Board, under certain circumstances, contracts with research-performing agencies for the investigation of problems of special interest to that body. The Department of National Health and Welfare, in addition to its grants program, may in agreement with the provinces make funds available for research in special areas. For example, a sum exceeding $100,000 per annum has been contributed to the National Cancer Institute out of the cancer control grant to assist in the research program of that body. This amount is matched by six provinces collectively which have co-operated with the federal department in this project.

RESEARCH TECHNIQUES

As an indication of methods employed in medical research, research techniques in individual projects are summarized in Table IV. The findings of an earlier survey of 1952-53 projects and those conducted during 1955-56 are outlined. In the earlier analysis, six individual techniques were defined, but because of the difficulty in differentiating laboratory from animal experimentation, and review of data from statistical studies, without more intimate knowledge of the research, these were combined for the more recent period. Time did not permit such intensive investigation. With the exception of field surveys, it will be noted that little significant change has occurred.

Among the supporting agencies, however, as indicated in Table IVa, variations occur depending upon the specific interests of the body concerned. Particularly noteworthy is the emphasis placed on laboratory studies in the programs of the National Research Council and the National Cancer Institute. To a lesser extent this is reflected in those of the Defence Research Board and the Department of National Health and Welfare, but the reverse is seen in that of the Department of Veterans Affairs. Statistical studies and field surveys fall almost entirely within the scope of the National Health Program.

TABLE IVa.—RESEARCH TECHNIQUES EMPLOYED IN STUDIES SPONSORED BY SELECTED AGENCIES, 1955-56

Research technique	N.R.C.	D.R.B.	D.V.A.	N.H. and W.	N.C.I.	Total
Clinical	23	23	69	56	5	176
Laboratory (including animal experimentation)	125	53	13	137	71	399
Statistical (including review of data)	—	—	1	14	1	16
Field survey	—	2	1	25	1	29
Total	148	78	84	232	78	620

THE DISTRIBUTION OF RESEARCH

To determine the proportionate distribution of research supported by the major granting agencies, an analysis of all research projects included in the "Reference List of Medical Research Projects in Canada" was conducted. In this, projects are classified in two groups, "Fields of Medicine", according to the scientific discipline involved, e.g., biochemistry or physiology, and "Disease Entity", referring to the pathological process under study.

To determine, as completely as possible, the distribution of projects according to the Fields of Medicine, those which involved the use of two scientific disciplines in more or less equal proportions were listed under each. Consequently, there is a duplication of some projects

TABLE V.—DISTRIBUTION OF MEDICAL RESEARCH IN CANADA, 1952-53 AND 1955-56, ACCORDING TO SPECIAL FIELDS OF MEDICINE, BY NUMBERS OF PROJECTS AND FUNDS ALLOCATED

Numbers of Projects					*Funds Allocated*				
	1952–53		1955–56			1952–53		1955–56	
Field of Medicine	*No.*	*%*	*No.*	*%*	*Field of Medicine*	*$ 000*	*%*	*$ 000*	*%*
Biochemistry, etc.	66	14.1	123	16.8	Biochemistry	275.4	12.6	650.9	15.7
Bacteriology, etc	55	11.7	68	9.3	Bacteriology	259.8	11.8	398.2	9.6
Pharmacology and therapeutics	37	7.9	64	8.8	Psychology and psychiatry	160.4	7.3	357.6	8.6
Physiology	28	6.0	60	8.2	Internal medicine	92.1	4.2	331.9	7.9
Pathology	24	5.1	43	5.8	Pharmacology and therapeutics	160.5	7.3	266.7	6.4
Internal medicine	17	3.6	43	5.8	Physiology	131.1	6.0	226.8	5.5
Cardiology	21	4.5	35	4.8	Pathology	77.6	3.5	220.8	5.3
Psychology and psychiatry	23	4.9	27	3.7	Cardiology	83.1	3.8	170.7	4.1
Endocrinology	40	8.5	26	3.6	Endocrinology	151.2	6.9	156.6	3.7
Neurology	11	2.3	24	3.3	Neurology	53.1	2.4	138.7	3.3
Nutrition	21	4.5	22	3.0	Radiology	88.6	4.0	117.1	2.8
General surgery	14	3.0	21	2.9	Climatic medicine	87.5	4.0	97.5	2.3
Radiology	16	3.4	17	2.3	Pædiatrics	26.2	1.2	90.8	2.2
Pædiatrics	5	1.1	17	2.3	Geriatrics	45.0	2.0	79.7	1.9
Hæmatology	19	4.0	15	2.0	Obstetrics and gynæcology	13.6	0.6	78.2	1.9
Climatic medicine	9	1.9	15	2.0	Hæmatology	116.8	5.3	77.8	1.9
Tuberculosis (all forms)	Incl. in	Bact.	14	1.9	Nutrition	94.9	4.3	72.6	1.7
Anatomy	16	3.4	13	1.8	Tuberculosis (all forms)	Incl. in	Bact.	71.0	1.7
Obstetrics and gynæcology	4	0.9	12	1.6	Anatomy	53.7	2.4	64.1	1.5
Geriatrics	4	0.9	10	1.4	General surgery	45.7	2.1	55.2	1.3
Not listed	39	8.3	64	8.7	Not listed	182.8	8.3	443.6	10.7
Total	469	100.0	733	100.0	Total	2199.1	100.0	4166.5	100.0

in Table V, amounting to about one in every six enumerated.

In the case of Disease Entities, as presented in Table VI, however, projects were listed only once and thus the number of projects and funds allocated are precise denominators so far as the percentage distribution is concerned.

In both Tables V and VI the categories have been listed in descending order of magnitude according to the 1955-56 analysis. For purposes

TABLE VI.—DISTRIBUTION OF MEDICAL RESEARCH IN CANADA, 1952-53 AND 1955-56, ACCORDING TO DISEASE ENTITIES, BY NUMBERS OF PROJECTS AND FUNDS ALLOCATED

Numbers of Projects					*Funds Allocated*				
	1952–53		1955–56			1952–53		1955–56	
Disease Entities	*No.*	*%*	*No.*	*%*	*Disease Entities*	*$ 000*	*%*	*$ 000*	*%*
Cancer	33	17.4	103	16.6	Cancer	170.9	18.4	468.3	14 8
Heart disease	10	5.3	47	7.6	Psychosis	125.9	13.5	265.2	8.4
Accidents	2	1.1	32	5.2	Heart disease	34 9	3.8	174.4	5.5
Arteriosclerosis and hypertension	16	8.4	31	5.1	Accidents	6.7	0.7	169.1	5.3
Tuberculosis (all forms)	6	3.2	28	4.5	Infectious diseases	73.2	7.9	157.1	5.0
Infections generally	13	6.8	27	4.4	Tuberculosis (all forms)	22.2	2.4	154.2	4.9
Psychosis	15	7.9	22	3.5	Arteriosclerosis and hypertension	67.4	7.2	144.0	4.5
Arthritis and rheumatism	16	8.4	21	3.4	Diseases of central nervous system	47.6	5.1	85.0	2.7
Diseases of central nervous system	8	4.2	19	3.1	Arthritis and rheumatism	58.3	6.3	59.8	1.9
Liver, gall-bladder and pancreas (excluding diabetes)	4	2.1	13	2.1	Neonatal diseases	7.9	0.8	59.5	1.9
Pneumonia and bronchitis	7	3.7	12	1.9	Liver, gall-bladder and pancreas	19.9	2.1	58.8	1.9
Neonatal period	1	0.5	11	1.8	Poisonings, alcoholism, etc.	5.5	0.6	55.7	1.8
Stomach and duodenum	7	3.7	10	1.6	Diseases of eye	3.4	0.4	53.5	1.7
Poisoning, alcoholism, drug addiction	—	—	9	1.4	Pneumonia and bronchitis	24.3	2.6	50.6	1.6
Genito-urinary diseases	5	2.6	9	1.4	Allergic disorders	—	—	48.8	1.5
Pregnancy	4	2.1	8	1.3	Anæmias and leukæmias	40.1	4.3	39.7	1.2
Anæmias and leukæmias	9	4.7	7	1.1	Pregnancy	13.6	1.4	35.0	1.1
Not classified	34	17.9	211	34.0	Not classified	209.0	22.5	1086.6	34.3
Total	190	100.0	620	100.0	Total	930.8	100.0	3165.3	100.0

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of general comparison, the results of a similar survey of research performed during 1952-53 are listed with the more recent study. In classifying the projects in the 1955-56 tabulation, minor modifications were made in the code utilized in the earlier study.

As in other such groupings, there are inadequacies and inconsistencies, but in an attempt to minimize the number of individual categories and yet permit meaningful analyses to be made, reasonable liberties were exercised in constructing the two codes. The shortcomings are acknowledged and in most instances will be quite obvious. Their existence should be borne in mind in assessing the figures as presented.

To reveal the content of each subgrouping, some elaboration is indicated. Under "Fields of Medicine", biochemistry also includes studies on enzymes, biophysics and pathological chemistry. Similarly, bacteriology embraces immunology, virology, mycology, tissue culture and parasitology; physiology covers aviation and submarine medicine, and pathology, both gross and microscopic as well as experimental and clinical pathology. Internal medicine takes into account gastroenterology, respiratory diseases, diabetes, thyroid, diseases of metabolism and rheumatic fever; cardiology, cardiac surgery and vascular conditions; neurology, clinical neurology, neurosurgery and neuropathology, and nutrition, vitamin deficiency, basic metabolic studies and food technology. Finally, radiology encompasses radiotherapy, radiation, including radiation injury, and anatomy takes into account histology, embryology and neuroanatomy. The content of the other categories in this table is evident from the title assigned.

In all there are 38 specific headings in the "Fields of Medicine" index, one further being added for those which could not otherwise be classified because of difficulty in determining the scientific method employed in the research.

In Table VI, "Disease Entities", cancer includes benign and malignant tumours and Hodgkin's disease, but not leukæmias. Heart disease, and arteriosclerosis and hypertension, are listed separately, the latter including also diseases and injuries of arteries and veins. Accidents also cover fractures, dislocations, burns, wounds, frostbite, immersion foot, shock and radiation injury. Infections group the common communicable diseases and infections generally, i.e., bacterial, viral, parasitic and fungal, but not tuberculosis. Psychosis refers only to psychiatric disorders; neuroses and psychoneuroses, mental deficiency and disorders of behaviour are listed together, while diseases of the central nervous system include central and peripheral organic disease and epilepsy. Under arthritis and rheumatism are found all arthritides together with diseases of bones and organs of movement not listed elsewhere. Sarcoma is included under cancer and rheumatic fever merits a separate category. Pneumonia and bronchitis also refer to other diseases of lung, bronchi and pleura, but not cancer or asthma. Diseases of the neonatal period are those associated with the first month of life and include congenital deformities. Genitourinary diseases include affections of the prostate and breast but exclude neoplasms, venereal disease and gynæcological conditions. Venereal diseases are found in a separate category in this index, and gynæcological conditions are grouped with pregnancy and its associated abnormalities.

There are 37 disease categories, one additional being designated for studies unclassifiable, because of the multiplicity of diseases under study or those projects not related to disease, e.g., in hospital administration, nursing and education. In the 1952-53 analysis the unclassifiable projects were excluded from the tabulation, thus accounting for the relatively low total.

No attempt has been made to relate the research being performed to the need in terms of alleviating illness and reducing mortality. A gross comparison may be of interest, however, between the numbers of studies of specific diseases, and causes of disease, disability and death. Table VII presents a listing of the 10 leading causes of illness, hospital admissions, disability and death, and contrasts these with research studies on specific disease groups.

The illness episodes (Column I) were obtained from a preliminary summation of findings of Canada's Sickness Survey and represent the occurrence of single disease episodes among people resident in representative communities. Consequently, persons in chronic disease institutions, e.g., for tuberculosis and mental disease, are excluded. It is emphasized that Column I is a tabulation of single disease onsets during the year; while such serious conditions as heart disease and cancer account for much greater disability, their incidence is consequently lower than the less serious, short-term illnesses which predominate in this listing. It should further

TABLE VII.—TEN LEADING CAUSES OF ILLNESS, HOSPITAL ADMISSIONS, DISABILITY, DEATH, AND NUMBERS OF RESEARCH PROJECTS, CANADA, 1955-56

	I *Illness episodes (Canadian Sickness Survey 1950-51)*	*II* *Hospital admissions Saskatchewan 1955*	*III* *Major causes of disability 1954-55*	*IV* *Causes of death Canada 1955*	*V* *Research projects 1955-56*
1	Acute nasopharyngitis (common cold and sore throat)	Deliveries, complications of pregnancy, childbirth and puerperium	Influenza	Heart disease, all types	Cancer
2	Influenza	Accidents, poisoning, violence	Accidents, poisoning and violence	Cancer and malignant tumours	Heart disease
3	Symptoms, senility and ill - defined conditions	Acute pharyngitis, tonsillitis, hypertrophy of tonsils and adenoids	Tuberculosis	Intracranial vascular lesions	Accidents, poisoning, violence
4	Accidents, poisoning and violence	Diseases of genital organs	Psychoneurosis and psychosis	Accidents, suicides	Arterio - sclerosis and hypertension
5	Common communicable diseases	Pneumonia	Symptoms, senility and ill - defined conditions	Infections of newborn, birth injury, diseases of early infancy	Tuberculosis (all forms)
6	Diseases of stomach and duodenum	Influenza	Arterio - sclerosis and degenerative heart disease	Pneumonia	Infections generally
7	Arthritis and rheumatism	Appendicitis	Diseases of stomach and duodenum	Congenital malformations	Psychoses
8	Skin diseases	Arteriosclerotic and degenerative heart disease	Other respiratory diseases	Nephritis and nephrosis	Arthritis and rheumatism
9	Genito-urinary diseases	Bronchitis	Arthritis and rheumatism	Senility; ill-defined and unknown	Diseases of central nervous system
10	Bronchitis	Malignant neoplasms	Bronchitis	Diabetes mellitus	Diseases of liver, gallbladder and pancreas (excluding diabetes)

be noted that the Sickness Survey covered almost the full calendar year 1951 during which the incidence of influenza reached epidemic proportions, and thus the significance of influenza in this table is exaggerated.

As a further index of individual disease incidence, a tabulation of hospital admissions in Saskatchewan during 1955 is presented in Column II of Table VII. The longitudinal effect of disease, as expressed in days of disability, is indicated in Column III. This was obtained from the annual report of Illness in the Civil Service (Federal) for 1954-55 and represents total days of lost time from work due to the conditions specified.

To achieve basic uniformity, the disease entities are categorized, generally, according to the Sixth Revision of the International Lists of Diseases and Causes of Death. Special groupings were made, however, of similar disease episodes.

SUMMARY

A factual survey of the financing of medical research in Canada has been made and the direction of the research has been examined, the latter in a more superficial way. The data were assembled in a relatively brief period and are admittedly incomplete. Nevertheless, it may be concluded that a sum approximating $9,200,000 was offered by known granting agencies for medical research in Canada during 1955-56. The research effort appears, in the main, to be directed towards the major causes of death and to a lesser degree towards those illnesses which result in temporary or prolonged disability. Progress, particularly in the past decade, has been most heartening for future developments in this field.

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REFERENCES

1. ETTINGER, G. H.: Medical Research, An Essay prepared for the Royal Commission on National Development of the Arts, Letters and Sciences, 1949-1951.
2. Reference List of Medical Research Projects in Canada, 1955-56.
3. LAYTON, B. D. B.: A Study of Medical Research in Canada, 1952-53.

PROFESSIONAL OPPORTUNITIES FOR THE PHYSICIAN IN THE CANADIAN ARMED FORCES MEDICAL SERVICES

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THE THREE Canadian Armed Forces—R.C.N., Army, and R.C.A.F.—provide that degree of protection for Canada which, in the opinion of the government of the time, may seem adequate and reasonable. Twice in the past 40 years we have seen the Canadian Armed Forces expanded to meet the shocks of wars which threatened our existence as a free nation. Following these wars, the Forces were contracted.

During the period 1919 to 1939 the Canadian people trusted in the League of Nations and the hope of an enduring peace. Subsequent to 1945, we were somewhat more doubtful about a lasting peace and, as a consequence, the regular Armed Forces were maintained at a much higher level of numbers and effectiveness. The events of the period 1945 to 1956, as exemplified by the Soviet seizure of the satellite countries, the Berlin blockade, and the Communist aggression against Korea, brought about a further Canadian Armed Forces expansion. Canadian soldiers, sailors, and airmen fought and died in Korea while this further expansion proceeded. And with the Korean War over, in this year of 1957, Canadians are still serving in Korea; are stationed in Europe as part of the forces of the NATO alliance; are serving with the UN Forces in Egypt; are truce observers in Pakistan and Indo-China, and on guard in Canada.

Canadian policy throughout our history has called for the provision of Canadian medical support for Canadian Armed Forces wherever they might be serving. This has been the policy and Canadian medicine has always provided the means of sustaining it.

At the present time, some 140,000 Canadian servicemen, dependent wives and children, Eskimo and Indian wards of the Crown, and civilian workers in the isolated areas of the North, are dependent upon the medical services of the R.C.N., Army and R.C.A.F. for skilled and devoted medical attention.

There are some 450 physicians in the three medical services. Their lengths of service range from the most recent graduates of 1956 to those senior officers with 30 or more years of service. Included in their ranks are many officers qualified in the clinical specialties in accordance with the standards of the Royal College of Physicians and Surgeons (Canada). There are, also, many officers holding diplomas in hospital administration, public health, and industrial hygiene, denoting the attainment of qualifications in the administrative medical fields.

It is of interest to note that, at the present time, there are 49 regular Armed Forces medical officers who hold clinical and aviation medical specialist certification. An additional 43 officers hold diplomas in public health, hospital administration, or industrial medicine. During 1956 alone, 14 medical officers were certificated as clinical specialists or as specialists in aviation medicine.

In a speech before the Defence Medical Association in Ottawa in November 1956, the Honourable Ralph Campney, Minister of National Defence, stated as follows:

> "The increasing magnitude of the task of the medical man in the defence field requires that we continue to have the co-operation and support of the medical profession across Canada. Co-operation and integration are the keys to advances within the medical services in the three armed forces. In this respect, I understand that Canada is generally well ahead of the United Kingdom and the United States. Particular attention is also given to creating opportunities so that medical officers in the Armed Forces can receive postgraduate training which is today of such importance as medical science progresses rapidly in its knowledge and its techniques."

This statement confirms the status of the medical officer of the Armed Forces. The challenge of the task is great, and only well-trained, energetic, and capable physicians in uniform can provide the wherewithal for meeting this challenge.

The Directors General of Medical Services, Navy, Army and Air Force, direct the activities of their respective services. On the other hand, in 1953 the Canadian Forces Medical Council was formed in order to ensure co-operation and integration of effort within the medical services and to obtain the co-operation and support of the Canadian medical profession as referred to

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in the Minister's statement. This Council is charged with the task of advising the Minister on all policies affecting the health and medical care of personnel of the Armed Forces; of ensuring that there is a maximum of integration of effort within the Department of National Defence; and, as a natural concomitant of these activities, a close and continuous supervision of the training and advancement of medical officers.

The Council* is chaired by a distinguished civilian physician serving in a voluntary capacity at the request of the Minister, and devoting part of his time to this task. He is assisted by a senior medical officer who is designated as Co-ordinator of Medical Services and who serves on the staff of the Chairman, Canadian Chiefs of Staff, and is a member of Council. The other members of Council are six in number and consist of:

(a) Three eminent civilian physicians serving, like the chairman, in a voluntary capacity on a part-time basis, and

(b) The Directors General of Medical Services, Navy, Army, and Air.

A Board of Consultants† has been appointed to act in conjunction with the Council. Represented on this Board of Consultants are all clinical specialties. The consultants are of the highest degree of eminence in their respective fields.

Composition of Canadian Forces Medical Council.—Chairman: Dr. J. A. MacFarlane, Dean of the Faculty of Medicine, University of Toronto. Members: Brigadier K. A. Hunter, Co-ordinator of Medical Services; Dr. G. E. Hall, President and Vice-Chancellor, University of Western Ontario; Dr. Rénaud Lemieux, President, Canadian Medical Association; Dr. J. Wendell Macleod, Dean of the Faculty of Medicine, University of Saskatchewan; Surgeon Commodore E. H. Lee, Medical Director General (RCN); Brigadier S. G. U. Shier, Director General of Medical Services (Army); Air Commodore A. A. G. Corbet, Director General of Medical Services (Air).

†The *composition of the CFMC Board of Consultants* is as follows: Dr. G. L. Adamson, Winnipeg, Psychiatry; Dr. J. B. Armstrong, Winnipeg, Blood Substitutes and Blood Products; Dr. E. H. Botterell, Toronto, Neurosurgery; Dr. Jean Bouchard, Montreal, Radiology; Dr. M. H. Brown, Toronto, Public Health; Dr. R. L. Denton, Montreal, Blood Transfusion; Dr. A. W. Farmer, Toronto, Orthopædic Surgery; Dr. Emile Gaumond, Quebec, Dermatology (Associate Consultant); Dr. Gustave Gingras, Montreal, Physical Medicine and Rehabilitation; Dr. Desmond Magner, Ottawa, General Pathology; Dr. G. W. Manning, London, Cardiology; Dr. J. F. McCreary, Vancouver, Nutrition; Dr. J. C. McCulloch, Toronto, Ophthalmology; Dr. R. Ian Macdonald, Toronto, Internal Medicine; Dr. N. W. Philpott, Montreal, Obstetrics and Gynæcology; Dr. H. R. Robertson, Vancouver, General Surgery; Miss M. G. Russell, Toronto, Nursing; Dr. A. H. Sellers, Toronto, Medical Statistics; Dr. D. H. Starkey, Montreal, Bacteriology; Dr. Chester Stewart, Halifax, Public Health (Associate Consultant); Dr. Carl C. Stoddard, Halifax, Anæsthesia; Dr. J. T. A. Sullivan, Toronto, Otolaryngology; Dr. Norman McK. Wrong, Toronto, Dermatology.

Medical officers enter the three medical services either directly after attainment of their professional qualifications, or via the subsidization route. In general, the already qualified physician is granted the rank of Naval Surgeon Lieutenant, Army Captain, or R.C.A.F. Flight Lieutenant, in that service which he has chosen. His pay as a married officer while holding this rank is $6420 per annum, increasing at three-year intervals to $7320. Periodic promotions to more senior ranks carry with them substantial pay increases. All officers are included in the Armed Forces contributory pension scheme and, while in the service, receive full medical and dental care without loss of income.

The other method of entry is by way of the undergraduate subsidization plan which has been in effect for the past six years. This plan provides the opportunity for carefully selected medical students to enrol as R.C.A.F. Pilot Officers, R.C.N. Sub-Lieutenants, or Army 2nd Lieutenants, at the commencement of their second last year prior to reaching the status of a registered and licensed physician. These officers receive the full pay and allowances of their rank, their fees are paid, and their books and instruments, etc., are provided during the ensuing two years.

Having completed these two years of instruction as an undergraduate and as a junior intern, the officer obtains his medical degree and also satisfies the Canadian Medical Council's requirement for an L.M.C.C. He then becomes eligible to register as a fully licensed physician in one of the Canadian provinces. Upon producing proof of such registration, the young medical officer is promoted to the rank of Surgeon Lieutenant, Captain, or Flight Lieutenant, as the case may be.

Having obtained the professional qualifications required by the Armed Forces, the newly commissioned medical officer commences his service training and duties. His first year of service is spent largely in service training and indoctrination into that service to which he belongs. He attends a course at the Medical Joint Training Centre which provides him with an insight into the problems of service medicine as they apply to all three Armed Forces and, in addition, he is given training by his own service in the military and medical problems peculiar to his parent service.

During the ensuing four years, the medical officer carries out the duties assigned to him both in Canada and abroad. These duties vary widely. They include periods as regimental, squadron, or ship's medical officer; as a medical officer in large and small service hospitals; and periods of postgraduate training.

As a result of his experience during the first five years of service, the junior medical officer is able to assess his prospects of advancement both from a service and professional standpoint. At the same time his service superiors are provided with an opportunity to assess him and to arrive at conclusions concerning his professional and service capabilities. Thus, by the time an individual has completed his first five years of service, a firm plan for his service and professional development will have been established. The further service career of the medical officer will develop from this firm base.

It is a fact that, at the time of graduation, most physicians think in terms of development of their talents on purely clinical lines. On the other hand, it is also apparent that some individuals, as time goes on, reorient their desires towards the fields of medical administration, public health, research, or non-clinical medical specialities such as aviation medicine. Such reorientation of desire is influenced by the individual's growng insight into his own capabilities and desires as well as by the observations and advice of his professional seniors and the potential opportunities which have presented themselves.

The medical services of the Armed Forces are admirably adapted for the provision of opportunities for training and advancement in all of these professional roles. The services require well-trained clinicians in medicine, surgery, radiology, psychiatry, ophthalmology, otolaryngology, anæsthesiology, etc. There is a large and continuing requirement for specialists in aviation medicine, public health, industrial medicine, and hospital administration. In addition, officers well trained and qualified in the special fields of service medical administration and command are essential.

Firmly established policies of the Armed Forces medical services provide the means for the training of medical officers in the various fields aforementioned. The medical officer who, during his first five years of service, has shown the aptitude and ability, as well as the desire, to progress in one of the clinical specialties is given the opportunity to do so. A policy which permits the provision of postgraduate training for medical officers ensures that, by a process of directed training, the able and industrious medical officer is generally able to sit for examination by the Royal College of Physicians and Surgeons (Canada) certification boards by the time he has completed ten years of service. Subsequent to attainment of certification in a specialty, opportunities are provided for advancement to Fellowship status. This, of course, is dependent upon the ability and industry of the individual.

A recently established policy has provided for a measure of accelerated promotion for the qualified clinical specialists. In addition, the magnitude of the professional task in our expanded armed forces has ensured, so far as can be foreseen, the employment of specialists in the pursuit of their specialties.

For those medical officers whose desires and aptitudes so indicate, training on medical administrative lines is provided. In their earlier years of service these medical officers are, by means of residencies and attendance at shorter postgraduate courses, established and maintained at the level of the good general practitioner. As time goes on these officers attend university courses leading to diplomas in public health, hospital administration, and industrial medicine. Selected officers, in addition, attend the services staff colleges and the National Defence College for instruction in the broader aspects of service duties.

The field of aviation medicine is of established importance. So far as Canada is concerned, the R.C.A.F. and R.C.N. medical services are the only sources of production of specialists in this field. To be recognized as a specialist in aviation medicine a course of training embracing six years of postgraduate study and experience is required. Upon completion of this training, the individual is required to pass the examination of the American Board. It is on these lines that medical officers of the Canadian Armed Forces are at present progressing and qualifying in aviation medicine.

The standards established by the Royal College of Physicians and Surgeons (Canada) for Fellowship or Certification are those accepted by the Armed Forces for designation of clinical specialists. The standards of the American Board are accepted as applying to the specialty

of aviation medicine. In the hospital and medical administrative field and in public health, university degrees and diplomas are paramount. Training in all of these specialties is provided by utilization of the Armed Forces hospital facilities, the R.C.A.F. Institute of Aviation Medicine, the D.V.A. hospitals, accredited civilian hospitals, and large U.S. Armed Forces hospitals. In addition, university courses are utilized extensively.

In the medical services it is recognized that an intimate association between hospitals and universities is a prerequisite for the attainment of the highest standard of patient care, clinical research and postgraduate training. It is also accepted that larger hospitals are essential in order that sufficient quantity and variety of clinical material may be provided for the training and clinical experience of medical staffs. As a result of recognition of these facts, the Department of National Defence is embarking on a program of hospital expansion of a tri-service nature. New and modern hospitals are being planned and built in Ottawa and Kingston, and the R.C.N. Hospital in Halifax will be renovated. These three hospitals will be operated as tri-service hospitals with the professional staffs being provided from the best available clinicians serving in the three Armed Forces. University affiliations will be established for these hospitals.

In addition to the well-qualified Armed Forces specialists serving on the staffs of the services installations, where necessary the best available civilian consultants are employed to provide professional advice and support. The Canadian Forces Medical Council's Board of Consultants provides an additional source of advice and support in relation to general and specific medical policies and problems. It provides, as well, a large measure of assistance in the professional education of serving medical officers.

It is by these methods, and using the facilities described herein, that the medical services are maintaining a high standard of medical service for the Armed Forces and, at the same time, providing for the medical officers of those services satisfying and rewarding careers. Another result of these progressive policies is an increasing appreciation by the medical profession at large that the physician in uniform is a well-trained and efficient representative of Canadian medicine.

Further information may be obtained by addressing communications to the Directors General of Medical Services, R.C.N., Army, and R.C.A.F., National Defence Headquarters, Ottawa.

MY MEDICAL EDUCATION IN RETROSPECT

"YOUNG PHYSICIAN" (*Class of 1955*)

A RECENT GRADUATE like myself enters upon the task of assessing his medical education with a peculiar mixture of security, humility and timidity. Security, because he realizes that, despite all his qualms at final exams about having learned anything at all, he did in fact learn something. Humility, because he now knows that he has only started learning. Timidity, because in spite of four years of active complaining in medical school and a further two of consolidating complaint and blame into a very lordly critique of medical education, he begins to appreciate the difficulty of assessing effectively just what his education did for him.

Hence, where as a medical student I once very easily wrote an appraisal of medical education, I now return to the problem somewhat wiser, and far less boldly.

Before venturing forth with my feelings, it seems imperative to describe a frame of reference:

Firstly: My individual opinion on *what* I received will be avoided as much as possible, since the way in which I received my medical education is an individual quirk to be spared others.

Secondly: An assessment of the *details* of my own medical school's educational plan would serve little general function. Therefore, I will endeavour only to consider the *principles of medical education.*

This "frame of reference", as you see, is a gambit allowing untold freedom of speech while making it look very respectable.

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Despite the many changes which have occurred of late in my tolerance and attitudes, one thing remains unchanged from my first day in medical school—I feel that this premise is a wonderful opening to my analysis. It is this—"that medicine is the art and science of treating a patient with a disease, and not a disease with a patient."

If I were to stop my retrospective analysis here, I could say boldly that I feel my medical education was a success in that it has taught me this premise and maintained it above all others; for in it lies the secret of being a doctor as differentiated (without too much difficulty) from an intelligent diagnostic and therapeutic robot.

In making this survey of my medical education I have broken the problem up into two phases: the individual in the medical education program, and the presentation of medical knowledge.

I. THE INDIVIDUAL

In evaluating medical education we must primarily consider what is desired as the product of all the turmoil of medical school; it appears to me that the most important objective is to graduate a competent doctor. What do I mean by this? A "competent doctor" is one who has that ideal balance between the portions of compassion and intellect which he possesses. There is no doubt that intellectual ability is a desirable thing in medicine, and much of my training was directed towards achieving it. However, my medical education would have been a failure had it not constantly attempted to inculcate and maintain my faculties for human warmth and compassion. A disproportion of one or the other is dangerous in practical medicine, and any medical education program which neglects to keep the balance as ideally as possible with the selected individual material will fail at a basic level.

What leads an individual to medicine is as yet undetermined. Sheldon and his associates have done extensive studies on the relationship between body physique, choice of faculty and personality. It is very comforting to know that on an average I am a well-built mesomorphic fellow with a physique capable of standing the rigours of my profession. It is a little disturbing to realize that we mesomorphs will probably not contribute much to the government and management of our community, and that most of the great new ideas will come from skinny ectomorphs, while the endomorphs (whose coronaries I will treat in future) control our immediate urban and suburban destinies! I may even find it distressing to realize that because I am medically inclined I am likely to be a mixture of both andric and gynic character. This in my mesomorphic body? Accepting all this for what it is worth, "intellect" and "compassion" are terms generally comprehensible—these other technical features are merely interesting facets of the problem.

Medical education must also consider the additional structure of the individual. This structure was nicely defined by the Undergraduate Education Committee of the First Council of the College of General Practitioners in Great Britain in 1954 as the following:[1]

> "Every medical student must have a sufficiently broad general education to look at the world from a humanitarian rather than a materialistic viewpoint. He must be intellectually humble and resilient enough to be able to alter his ideas because time inevitably changes old beliefs. He must develop a self-discipline in his way of thinking to protect himself from specious advertisements, from unscientific publications and journalistic enthusiasm. He must be the severest critic of his work.
>
> "These are the basic attributes needed by all medical graduates in whatever branch of the profession they eventually elect to serve. To develop these qualities with economy of time and maximum concentration of effort is, in our view, the purpose of the curriculum. It is no easy target and to attain it, every item of the medical student's training should be scrutinized and ruthlessly discarded if it does not contribute something essential to these ends."

Another viewpoint of the requisite structure, expressed this time by American minds, states the following as desirable in the individual:[2] (1) demonstrable intellectual capacity, (2) an ability to communicate, (3) self-reliance and maturity, (4) originality and curiosity, (5) an interest in extracurricular activities, (6) persistence towards achievement of his goals, and (7) a socially acceptable aggressiveness.

This then is the individual—the unit upon which medical education is built. With this baseline drawn, the second phase will be presented and then I can discuss both in more detail.

II. The second phase in this discussion involves a definition of the nature of the basic problem in medical education, and an attempt to suggest for its solution some ideas stemming

from reflection upon the methods of my own medical school.

The problem seems to be: how to present the great bulk of material requisite to learning about diagnosis and treatment of disease, and still maintain in the student that perspective between disease and patient. In other words, this is the problem of method in maintenance of the relationship between:

(a) the art of medicine, which is a never-changing factor;

(b) the science of medicine, applied and clinical—both of which are altering continually;

(c) the external demands made on medicine —these demands are changing also but at a slower rate.

This is a fantastic problem. As anyone can see, techniques of medical education of a quarter-century ago are outmoded today. A critique of my own medical education must determine whether it solved this problem successfully "with an economy of time and maximum concentration of effort".

Let me now discuss these two broad phases in more detail.

I. PREPARATION OF THE INDIVIDUAL

This phase of medical education actually reaches far back into any individual's life and scarcely ever starts with one's arrival in medical school. Because of this I believe that it is part of the responsibility of every medical educational program to carefully influence and select their candidates. The principles and care related to selection seem in most cases to be directly related to the care with which the actual teaching program is set up.

There are several facets to be considered in selecting any individual. Some of these facets are amenable to guidance by the principles of medical education; others are not, such as:

(i) the *hereditary qualities* of the individual which often predetermine capability and excellence of a candidate;

(ii) *home background*—again this cannot be influenced by any educational program, and the favourable and unfavourable factors in a man's background can only be considered passively;

(iii) the *character* of the individual is always of importance. This has already been discussed in part. Its assessment again depends on astute judgment by selection committees. I feel that, with these three predetermined factors considered, a careful matching of the individual to the program of education will prevent overburdening the latter with unfit candidates, and also provide the best possible candidates for the system.

The problem of selection methods is beyond my powers of solution. In my own school it seems to have been done by some mixture of alchemy and intuition, in view of the fact that a large majority of the students had never approached the environs of the school before their first day of lectures, and yet very few of these people ever proved unsatisfactory. Where a system of interviewing is possible, I feel that a carefully picked selection committee should carry out informal interviews where the candidate can be observed while functioning at near-normal levels. Ideally this committee might consist of full-time academic men, both preclinical and clinical phases being represented, together with a final-year student, who is more likely to be closer to the candidate's viewpoint than would be any of the other members, and who might respond to the nuances others might miss in making his assessment. Finally, I feel that a non-medical woman, preferably a very feminine woman, should be a committee member—not to make the committee's task less arduous but to provide an innate response, without inhibition, to the gynic compassionate qualities of the candidate. Again, such a lay member might assess the candidate from a would-be patient's viewpoint.

It is obvious that in most cases there will not be too much difficulty in assessing these three qualities in the candidate. This is because a proclivity for medicine so often naturally includes the qualities most desired. The days of medical school rush are declining, I believe, and one seldom encounters the application from the convict saying, "I would like to apply for medicine. I have only two years to serve and the warden says he will give me a good reference."

There now remain to be discussed the facets which *are* amenable to guidance by medical education.

(1) PREMEDICAL EDUCATION

I sincerely feel that medical education begins back in undergraduate school (if not earlier—but at least in the undergraduate years it is feasible to influence its course). Here is the opportunity to shape a man for his role. We

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accept many well-trained candidates passively; would it not be better still if we could actively influence some of them in such a way as to increase their opportunity and improve to a maximum their potentialities?

An education in the humanities is to be sought. This is something which many candidates might have chosen but for the fear that it would decrease their chances of acceptance in a "scientific" course. Granted that there is wider publication of the preference of medical schools for a candidate with a good general education, I feel that this is still not as generally known as it might be. Though not all temperaments will want an arts education, a more forceful encouragement of this form of education, both at medical school and undergraduate level, would prevent many wavering students from missing their opportunity.

Secondly, and of increasing importance, is the problem of the so-called "premedical" subjects. These consist of chemistry (organic and inorganic), biology (botany and/or zoology) and finally physics. Variations occur with various medical schools, but these are the traditional subjects. Medicine now consists of an overwhelming variety of facts, all of which no one man will ever know, but a good many of which every doctor must know. Economy of time is essential in medical education. I believe that this economy could stretch back further through first-year medicine to incorporate premedical undergraduate studies. For those preparing for medical school these courses could be orientated especially towards that end. Thus the opportunity to acquire knowledge in subjects allied to medicine, and of the new advances significant in these fields, could be given early in university education, instead of expending precious time and energy in the medical school. A medically orientated "basic science premedical" course would provide valuable fundamental knowledge and also economize on time.

The ramifications of this problem are huge. How and where are you going to place these courses in the program? How do you balance humanities and science? Dr. R. Struthers has suggested solving the problem by devising an eight-year "tangential" medical course in which the first year is predominantly in humanities and the eighth year predominantly in medical sciences with a gradation in between. In this way correlation is feasible and the benign influences of the humanities are maintained throughout the course.

This brings up and almost adequately deals with the final point in my consideration of the preparation of the individual—the maintenance of humaneness in him.

I have touched on this several times because in looking back it keeps recurring again and again as a vital point. The medical education program may have done a wonderful job in selecting the man but if it crushes out his humanity it is a dismal failure. In my own case, my education was successful in maintaining if not augmenting my compassion. However, in part my particular program failed because it did not keep this quality alive in all my classmates; it might have done so had the initial effort been maintained. The solution is not easy, and nothing I am going to say will make it easier; however, two things are obvious.

A "tangential" course will maintain one's contact with subjects stressing human emotions, responses and expressions longer than does the present system. Secondly, continuous exposure to the patient as an individual with a disease in an environment of many factors—in essence "comprehensive medicine"[3]—will prevent medicine from becoming the consideration of a disease with a patient.

These are a few of my thoughts on the unit or the individual in the medical education program. Now we arrive at the most difficult phase to assess.

II. THE PRESENTATION OF MEDICAL KNOWLEDGE

In this matter, temerity is most likely to overcome me. Many august bodies of gentlemen have sat down and pondered the problem; some have even acted upon their thoughts, and in truth much of what I have to say cannot help but be a recapitulation of other viewpoints. I soon found when I became interested in medical education that any new and original concept I thought I had developed had already been carefully considered by two or three other groups; nonetheless, I will proceed.

The topic has already been broached earlier in this paper; there I stated my opinion that the focus of the problem was: (a) maintenance of perspective between patient and disease, and (b) continual reassessment of the foundations of the art, the clinical and applied sciences, and the external demands of medicine.

Medical education must be forever adjusting itself to these problems. It must always reassess itself to maintain its comprehensive character, and this decade is a period of particular upheaval where much reassessment and reorganization is being done. The art of medicine, because it deals with human nature and relationships, is basically unchanging. My course showed me passively some of this art, but much of the learning was intuitive. A more active part could be taken in the course to teach the art of medicine, and I am certain that no time spent on the technique of meeting and interviewing patients would be lost. I would highly favour the introduction into the course of a study period devoted to the specific techniques of interview, observation, and the giving of advice. In a sense this is applied and cultivated art—a little less pure than natural capabilities but indeed very practical. A Cornell group has already broached this in their pædiatrics residency program; their report on the experiment makes very interesting reading.[4]

The next and far more imposing problem to discuss is the method by which a medical curriculum adjusts itself to the teaching of clinical and applied medical sciences. These two factors are constantly changing with each decade, and the quality of significant facts and knowledge is continuously increasing. It is not the purpose of this paper to offer specific criticism of how my own course handled the problem, except to say that I am left with an impression that further economy of time and effort is still possible. Certain techniques have been suggested above; now I want to express a philosophy.

This philosophy states that in our times the volume of facts is too unwieldy to teach effectively in the medical curriculum. Instead the curriculum must teach principles based on these facts; when the principles are learned, newer facts may be fitted into the basic framework.

If I am carefully trained in medical school so that I have a firm grasp of principles covering each fundamental phase of medicine, then the individual facts have relevance and as newer ones arrive they too will be fitted into the framework. This stress on the use of principles is not new in education, but for the sake of the effectiveness of medical education in our present society, I think it is essential that we pay very close attention to this philosophy. I do not want to quibble about semantics, but we do term our stay in medical school a period of medical *education;* we do not call it "instruction". The distinction is important, for where the purpose of the former is to develop thought and reasoning powers and to learn principles, the latter's purpose is to teach techniques and facts in a particular field.

I noted in my own medical school that the teaching fellows on the ward usually used this philosophy. We were surrounded by many patients, each representing a great number of facts. Instead of focusing on these facts, the instructor nearly always used the fact or patient as a theme for a general principle: when we had grasped the principle, then he was ready to show us the facts before our eyes. Another feature of this philosophy is that it makes the intern and residency years apprenticeship years in the true sense. This is as it should be, and I feel that this form of education, if not initially, will eventually endow the new graduate with a self-confidence and reasoning power not available to a person graduated in a curriculum stressing facts instead of principles.

The last foundation to be considered is again a changing one, which will vary considerably with the nature of the medical school, its location, source of students, destination of graduates, etc. This is the foundation of external demand and requirement expected from a medical graduate. It is obvious that a regional medical school will stress principles and objectives different from those of a school with no regional ties. Perhaps, even more particularly, these factors will determine to what extent medical ethics and economics are taught.

This opens up a wide new subject as yet undiscussed—namely, the doctor in the community and in business. If medical school is to teach comprehensive medicine, one should consider not only the patient but also the doctor in the community. A carefully planned program should teach principles whereby medical ethical judgment can be developed. Also, awareness of the economic problems of today, as well as practical business knowledge, is essential to efficient practice. We are corporations unto ourselves with a shorter earning lifetime than average, and no pension plan at the other end. Careful business sense would strengthen any doctor's economic position and protect him from influences detrimental to the practice of good

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medicine. I am beginning to feel the lack of my knowledge of medical economics and of business procedures; some instruction in these matters during the course would have been of considerable value.

How then can a medical education program most suitably present these three phases, and maintain the perspective between patient and disease? This hinges on a balance between the following factors, which are: (1) the teacher; (2) the material; (3) the student. On one side of the balance are the teacher and his material; on the other is the student.

(1) THE TEACHER

The whole success of many parts of the program depends on the teacher. From him comes the organization of ideas, the selection of facts, and the impetus to learn. Granted that no teacher can implant knowledge, at least he can present it in an implantable way. In medicine many of the teachers are teachers only by chance; some are good and others are not. It does seem strange that in an advanced and complicated body of knowledge such as medicine some energy is not expended in actually *training* teachers in the rudimentary techniques of teaching. What are natural gifts in some persons could scarcely be improved upon, but somewhere within the vast body of "part-time" teaching I am sure improvement could be made in the imparting of material. The mainstays of good teaching are clarity, enthusiasm for one's subject, and overemphasis without distortion. Not every course could afford to be given by a lecturer whose enthusiasm carried him to the point of feeling that his was the only course, but this sort of enthusiasm makes the course more vital. To circumvent overweighting a course and producing repetition of material in other courses, a general orientation of the whole medical course might be of use for all teachers, with central control of the distribution of topics. The memory which provokes this suggestion is the one concerning the number of times I heard a lecture on fluid and electrolyte balance—at least 9 or 10 times from different departments in one year, I am certain.

What really is the best teaching technique? It is hard to say. By the time medical school is reached the teacher is dealing with a group of minds each individualistic, each with its own learning technique. To offer formal lectures implies a very definite demand for superior, well-trained teachers who will project principles or facts in a manner acceptable to all of these minds. This must be far above average teaching. One partial solution, being successfully used in more and more teaching hospitals, is to employ the teaching fellow and place less emphasis on formal lectures. This approaches more closely what may be the ideal mode of teaching in medicine—the tutorial system. Perhaps some day this will come, but until then we must improvise and use our teaching fellows to the fullest advantage.

(2) THE MATERIAL

Here I will not venture on impossible ground. All that I care to say is again a recapitulation of other ideas. Various schools have wrestled with the problem of when and how to present material, and reorganization of curricula is in the mode.

Again I stress my viewpoint as a graduate, that the facts are not the important thing in medical school. What is important is the selection of facts which serve to emphasize and communicate a principle, whether it be a principle of tissue response, hæmodynamic adjustments, therapy, or physical diagnosis.

As it now stands the average medical course is grouped into two phases: (a) the preclinical phase where so-called basic sciences are presented, and (b) the clinical phase where patients are interviewed and used as teaching material. I feel that this segregation is wrong, because the preclinical principles are always applicable to the clinical facts, and concurrent presentation would be more likely to improve the correlation between basic science and clinical problem. Various new techniques are now being tried to meet this challenge in association with other attempts to get away from the "corpse-orientated" course which very strongly divides preclinical years from patient-orientated years. Part of the problem is readjustment of the presentation of facts in preclinical years. This could be relieved if the premedical science subjects were altered as discussed above.

The other problem in presentation of material is how to incorporate the "specialties" as an integral part into general medical principles. Again, I think the only way to do this is not to stress the facts of each specialty—these are to be learned

later (other than basic facts used to demonstrate principles) in residency years where indicated. What could be stressed in presenting a specialty subject is:

(a) The mode of function of the specialty;

(b) Its potentialities—where new roads may lie: what it can do for general medical principles.

(c) Its facilities. This does not mean detailed knowledge of techniques but rather what techniques or facilities are available to aid the investigation and solution of a problem.

(d) Finally, and perhaps primarily, the indications for considering the use of specialty techniques and knowledge in any general medical problem.

I am afraid I spent long and now forgotten hours in "specialty" sessions learning details I will never use. Among these hours I do remember many in which the enthusiastic lecturer clearly emphasized his simple point, outlined a principle or a problem to be recognized, a facility available, and when to admit defeat and send the patient to him.

III. THE STUDENT

The opposite side of the balance carries the student—the whole objective of the medical education program. Considerable care is taken in selecting the student. This seems only logical, for medical education is a costly business and despite humanitarian aims it must follow business principles and the school must safeguard its investment.

Assuming careful student selection, is the focus of the program only to be on material and techniques of teaching? If so, again the program is not complete. To increase capacity for knowledge in the individual student by increasing the demands on him without alienating him and altering his receptivity is a feature of most educational techniques. I encountered several topics from which I was alienated, and to this day I am sure I know less about them than I should. How a program can offset this alienation is difficult to determine, but honest relationships between student and faculty and encouragement of student opinion and criticism help much to decrease alienation.

The receptivity of a student will depend so much on the quality of the stimuli offered; before we know it we are back again to teachers and materials. Closely related to this, however, is the nature of the learning environments. Some of these dampen capacity and receptivity, others keep them alive and encourage follow-up knowledge. Some of the newer programs have paid considerable attention to environment and have incorporated into it individual study areas and laboratory space in an attempt to encourage thought and increase receptivity. In terms of environment, an important responsibility of a medical school is to provide a good library; this is of paramount importance in a teaching centre. The availability of texts and journals is vital and the knowledge of how to use a library would not be amiss as a lecture in a medical course. (Encouragement of the art of careful selection of reprint material also should be undertaken in medical school. In this way personal libraries can be built up while the student gets the feel of what to read in the journals.)

Environment also includes living quarters. With a tutorial system of teaching, residence style of living becomes more important. It has been argued that medical students should live together in their own dormitories and suites—in an atmosphere of their own. It can also be argued that they should not—but rather be kept in contact with students of the liberal arts to maintain their humanitarian potentialities. Ideally both plans could be combined with blocks of medical students living in general university residences where physical layout is conducive to study as well as to discussion.

In any program, the objective should be to develop within the student the mature balance of *intellect, imagination,* and *healthy scepticism.* These are all potential factors in any new medical student. By the time he passes into the final phase of his medical education in internship and residency training, he should have been taught careful discipline of the intellect, the imaginative powers should have been preserved, and with knowledge should have come judgment and scepticism of positive value.

Out of all this will be produced, one hopes, a graduate who will enter his internship in a position to apply principles and accumulate facts which will now have significance, and who will appreciate the interrelationships of disease, patient and himself.

Thus I come to the end of the analysis of my medical education. As you can see, it appears

not to have been a very easy task to undertake; it is not so much an analysis of my own education as an expression of what I feel a medical education should be. My views are now quite different from what they were two or three years ago and no doubt very different from those of a decade hence. The ideas, observations and reactions related to my education are by no means original; perhaps only the grouping of thoughts can lay claim to that. But certainly the feelings are sincere. If I may hazard a summary of what I have gathered together in looking back at my education I would express it as follows.

Medical education should make principles of medicine its goal, utilizing facts as a means to illuminate these principles. Medical education, to accommodate the vast volume of facts, could be facilitated by governing the material in premedical science subjects. Medical education involves not only presenting principles and facts to a potential doctor, but also the selection of the individual best suited to the role, and maintenance of the proportion of desired qualities at an optimum balance.

A comprehensive medical education program also concerns itself with the training of teachers and choice of teaching methods, as well as selection of environment most beneficial to the student.

Above all, it encourages human relationships with the patient, and in the treatment of his illnesses, keeping in mind at all times the continually changing demands of the world upon medical science and practice.

REFERENCES

1. College of General Practitioners: *Brit. M. J.*, 1: 1146, 1954.
2. SOSMAN, M. C.: *New England J. Med.*, 254: 1105, 1956.
3. WHITE, K. L., BROWNE, J. S. L. AND WITTKOWER, E. D.: *Canad. M. A. J.*, 70: 115, 1954.
4. KORSCH, B. M.: *Pediatrics*, 18: 467, 1956.

WHAT ARE THE REAL COSTS OF POSTGRADUATE MEDICAL EDUCATION?

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The principle that medical education is a process that continues throughout the active life of the physician is gaining increasing acceptance among the medical profession. The close connection between the physician and the medical school–teaching hospital team, begun during undergraduate education, must continue after graduation. Every medical school on the North American continent has made some provision for the training of its medical graduates, who return for revision or replenishing of their medical knowledge.

The Canadian physician, regardless of his sphere of activity, has much to learn from Mrs. Troutwine's experience in designing the organization needed for extensive postgraduate medical activities. If the ideal of lifelong contact between the parent medical centre and the practising physician is to be realized, we must learn new facts and techniques. What organization is necessary in each area? What are the maintenance costs of the organization? What "dilution" of medical education can it tolerate–i.e., how few physician-students can it serve at increasing distances from the centre? (This depends in part on the willingness of the centrally placed physicians to accept a proportionately greater share of the costs.) Must the practitioner go to the centre or can the medical education teams come to his hospital? Some of the answers to these questions have already been established by Mrs. Troutwine and her group.

A number of excellent programs firmly established in Canadian medical centres are providing postgraduate facilities for the physician practising at some distance from his medical school. The work done by these groups and the pioneer work being done by such groups as the Postgraduate Medical Institute and the Bingham Associates in New England, may be of assistance to others planning for such programs.

LITTLE HAS BEEN WRITTEN on the real costs of postgraduate medical courses and medical education. In most places where programs are offered they are usually tied to, and subsidized by, medical universities or medical organizations. Consequently, a substantial part of the cost is absorbed, because rent, personnel, and other facilities are donated.

The Postgraduate Medical Institute of Boston, Massachusetts,[1] is in a unique position since it is responsible for 100% of its operating expenses. It is, in effect, a small medical school, responsible for everything from mailing out course announcements, registering doctors, depositing their fees, paying speakers, and issuing certificates, to the compilation of statistics concerning the registrants and the cost for each area course.

The Postgraduate Medical Institute has been giving Courses in General Medicine since 1952, starting with the one in Boston, Massachusetts. During the year 1955-56 it offered nine in various areas of Massachusetts and one in Rhode Island. These are all standardized and

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controlled at the local Boston office of the Institute. The only local variations concern details such as time of day or number of sessions. At each course the identical procedure is followed with regard to planning and execution.[2]

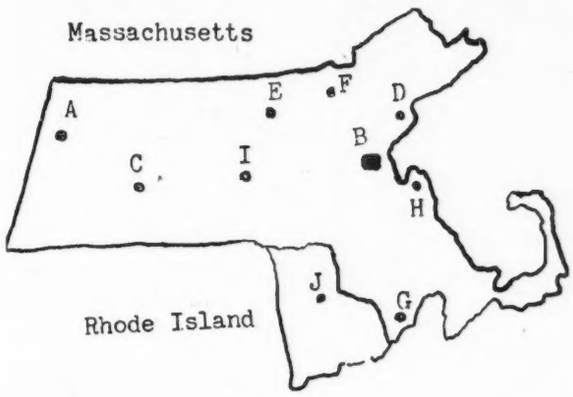

Fig. 1.

Fig. 1 shows the location of cities where 1955-56 courses were conducted. They are listed in Table I, which also gives the mileage from Boston and the number of registrants.

TABLE I.

Name of course	*Number of miles from Boston and city where given*		*Number of registrants*
		miles	
(A) Berkshire	Pittsfield	146	48
(B) Boston	Boston		112
(C) Connecticut Valley	Holyoke	97	66
(D) Essex South	Lynn and Salem	15	38
(E) Fitchburg	Fitchburg	45	29
(F) Middlesex North	Lowell	26	38
(G) New Bedford	New Bedford	55	30
(H) Norfolk South and Plymouth	Braintree	12	26
(I) Worcester	Worcester	40	36
(J) Providence, Rhode Island	Providence	43	55
Total number of registrants for all courses, 1955-56			478*

*Figures are available for each year since 1951.

Table II shows the total expenses, as well as profit and loss, of all Institute courses given during the year 1955-56.

Table III shows the breakdown of course expense for 1955-56, according to area and specific categories.

Depending upon the number of courses given each year, it is simple to determine how much of the office staff's time is spent on courses.*

*This has been done for two years, but figures are shown in this article for the fiscal year 1955-56 only.

For example, during the year 1955-56 half of the Institute's staff worked on courses for half the year. The amount for general expenses of the Postgraduate Medical Institute, charged to courses for the year 1955-56, is shown in Fig. 2.

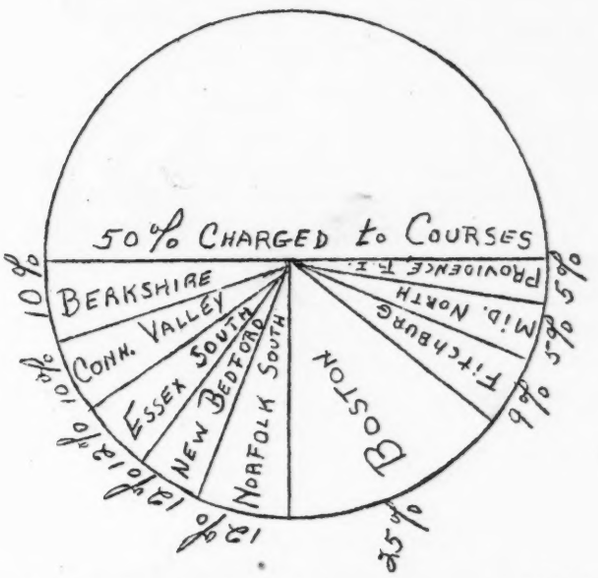

Fig. 2.—Percentages of general expenses of PMI charged to courses, 1955-56. Worcester course not included, as this was a special community hospital program, and not the panel-type course in general medicine.

This 50% of the general expenses of PMI, to be charged to courses, was broken down into a definite percentage for each area course, according to the number of hours the program was given. For instance, the Boston course had 25 sessions of 2 hours each, totalling 50 hours. The Berkshire course had 10 two-hour sessions, or a total of 20 hours. The total number of hours for all courses that year was 210. Therefore, Boston's percentage was 25%, or 50 of the 210 hours, and Berkshire's was 20/210 or 10%.

The percentage costs *(indirect)* consist of the following: wages, maintenance, rent, operating expenses (such as postage and telephone), supplies, conferences and research, and equipment.

In addition to percentage costs (indirect), each area course was charged *direct* expenses which were accurately accounted as belonging to that area exclusively. These consist of speakers' fees, speakers' travelling expenses, cost of program announcements, ticket books for registrants, certificates, salaries of local course secretary and projectionist, etc.

TABLE II.—FINANCIAL REPORT OF COURSES CONDUCTED 1955-56

Course	*Receipts*	*Expenses*	*Profit*	*Loss*
A. Berkshire	$1770.00	$3406.85		$1636.85
B. Boston	9474.00	7581.75	$1892.25	
C. Connecticut Valley	2500.00	3303.87		803.87
D. Essex South	1735.00	3498.73		1763.73
E. Fitchburg	912.00	2980.09		2068.09
F. Middlesex North	901.00	1631.01		730.01
G. New Bedford	1371.00	3825.05		2454.05
H. Norfolk South and Plymouth	1248.00	3404.50		2156.50
	$19,911.00	$29,631.85	$1892.25	$11,613.10
J. Providence, R.I.				
Tuitions	1375.00	1653.62	— 0 —	— 0 —
Amount reimbursed by R. I. Academy of General Practice	278.62			
I. Worcester	992.00	771.23 (Direct) 700.00 (Indirect)		479.23
	$22,556.62	$32,756.70	$1892.25	$12,092.33
				$12,092.33 1982.25
Net loss on courses				$10,200.08

TABLE III.—POSTGRADUATE MEDICAL INSTITUTE FINANCIAL REPORT OF COURSES 1955-1956

	COURSE												
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*		*J*		*I*	
	Berkshire	*Boston*	*Conn. Valley*	*Essex South*	*Fitchburg*	*Mid. North*	*New Bedford*	*Norfolk S. and Plymouth*	*Total*	*Providence Tuitions*	*Reimburse.*	*Worcester Comm. Hosp.*	*Total all courses*
Receipts	$ 1770.00	$ 9474.00	$ 2500.00	$ 1735.00	$ 912.00	$ 901.00	$ 1371.00	$ 1248.00	$ 19,911.00	$ 1375.00	$ 278.62	$ 992.00	$ 22,556.62
Rent Exp.	102.00	280.00	102.00	125.40	92.80	51.00	131.40	131.40	1016.00	36.00	—	—	1052.00
Speakers' fees	800.00	1170.00	750.00	600.00	750.00	250.00	1000.00	525.00	5845.00	600.00	—	450.00	6895.00
Refunds	—	263.00	—	—	—	—	—	—	263.00	—	—	—	263.00
Misc. Exp.	21.72	108.89	87.02	24.57	47.55	1.64	5.06	65.06	361.51	52.86	—	46.82	461.19
Tel. and Tel.	98.75	209.08	89.85	107.40	80.68	51.94	107.61	102.71	848.02	33.52	—	18.00	899.54
Conf. and Research	180.66	320.37	130.66	158.23	118.14	92.63	175.38	158.23	1334.30	54.99	—	—	1389.29
General Exp.	20.32	49.17	20.32	24.80	18.12	10.51	23.80	23.80	190.84	5.56	—	—	196.40
Supplies	165.22	388.59	165.22	195.53	150.39	88.15	185.76	185.76	1524.62	67.65	—	—	1592.27
General Travel	13.88	76.52	13.09	17.49	12.51	7.62	27.26	27.26	195.63	6.28	—	—	201.91
Speakers' Travel	159.08	1.97	98.79	—	—	—	—	—	259.84	—	—	—	259.84
Furniture and Fixtures	19.42	47.78	19.42	23.48	17.17	10.45	23.48	23.48	184.68	8.08	—	—	192.76
Wages	1482.26	3709.18	1484.19	1767.28	1332.46	742.09	1767.28	1767.20	14,051.94	527.11	—	700.00 (Ind. Chg.)	15,279.05
Maintenance	32.21	63.23	28.03	33.95	25.40	13.24	33.95	33.95	263.96	12.57	—	—	276.53
Adv. and Literature	211.74	644.36	215.69	300.81	245.10	258.55	224.28	240.86	2341.39	201.53	—	256.41	2799.33
Postage	19.31	46.86	19.31	23.45	17.36	10.07	23.45	23.45	183.26	7.35	—	—	190.61
Equipment	71.26	180.19	71.26	85.51	64.22	38.62	85.51	85.51	682.08	35.62	—	—	717.70
Secretarial Fees	9.02	22.56	9.02	10.83	8.19	4.50	10.83	10.83	85.78	4.50	—	—	90.28
Total Expenses	3406.85	7581.75	3303.87	3498.73	2980.09	1631.01	3825.05	3404.50	29,631.85	1653.62	—	771.23 700.00	32,756.70
Net Profit	—	1892.25	—	—	—	—	—	—	—	—	—	—	1892.25
Net Loss	1636.85	—	803.87	1763.73	2068.09	730.01	2454.05	2156.50	11,613.10	—	—	479.23	12,092.33
									Net Loss				$10,200.08

The speakers' fee schedule is as follows:

Local or Boston speakers are paid	$15
Those travelling within a 35 mile radius	25
75 " "	50
over a 75 " "	50, plus 8c a mile travel allowance.

Actually, the burden of the costs of an area course does not fall on the local areas. All deficits are made up from the money and grants given the Institute for postgraduate medical education, as well as money obtained from courses showing a profit. The Providence, Rhode Island, course was totally self-supporting because the Rhode Island Academy of General Practice made up the deficit. This meant that no money given by the Massachusetts organizations for postgraduate education in Massachusetts was spent outside of the state.

From the foregoing financial data, as well as registration statistics and number of program hours in the various areas, it was possible to calculate: (1) total cost of all courses, (2) total teaching hours, (3) total cost per hour, (4) average total cost per registrant, (5) average course cost per registrant per hour.

Table IV shows the statistics for the Massachusetts courses for 1955-56.

TABLE IV.

Total cost of Massachusetts courses		$31,103.08
Total number of hours	210	
Average total cost per hour		148.10
Total number of Mass. registrants	423	
Average total cost per registrant		73.52
Average course cost per Massachusetts registrant per hour		3.15

These figures may seem startling, but we feel they are closer to real costs than any others we know of. It is also interesting to note that they are in accord with the formula given by Dr. Douglas D. Vollan in a survey entitled *Postgraduate Medical Education in the United States*, carried out by the Council on Medical Education and Hospitals of the American Medical Association, 1952-55. This was published by the A.M.A. in 1955. (See page 135 of the Vollan Report for the formula.)

In spite of this, most States and places are still thinking in terms of only the speakers' fees, or some other item of the outstanding costs, the major part of the total expenses being hidden.

The Postgraduate Medical Institute is in effect: (1) a small medical school giving postgraduate medical education; (2) a clearing-house of information; (3) a neutral organization which is the connecting link between medical schools, hospitals, physicians, and graduate medical activities; (4) a consultant service for organizations planning postgraduate programs or other phases of postgraduate medical education.

It is entirely dependent upon its course tuitions and upon annual grants from contributing agencies. The following list of collaborating agencies includes those that contribute financially and those supporting in other ways, such as the medical schools: Boston University School of Medicine; Harvard Medical School; Harvard University School of Public Health; Tufts University Medical School; Massachusetts Medical Society; Massachusetts Department of Public Health; Massachusetts Chapter of the American Academy of General Practice; the Lahey Clinic; the Joslin Clinic; American Cancer Society, Inc. (Massachusetts Division); Arthritis and Rheumatism Foundation (Mass. Chapter); Massachusetts Heart Association, Inc.; and United Cerebral Palsy Associations of Massachusetts.

It was established in 1951 with a total budget of $5000, and growth has been so rapid that for the fiscal year ending 1955-56 it had an equivalent of an $89,000 budget. Of this, $64,000 was for PMI general operating expenses. Twenty-five thousand dollars was provided, directly and indirectly, to PMI by a pharmaceutical corporation in connection with an arrangement for the publication of a monthly bulletin known as "What Goes On", listing medical activities in New England. Fifty per cent of the $64,000 budget for PMI operating expenses is used for courses (the remainder being spent in other activities such as the clearing-house of information). In spite of this growth and the fact that tuition revenue paid 67% of the cost of courses during the year 1955-56, it was still necessary to seek additional outside contributions to balance the budget.

We felt that doctors would be willing to pay the real cost of their postgraduate medical education (which last year was $3.15 per capita per hour), and therefore advanced the fee from $2 per hour of instruction to $3 per hour. As a consequence we have only 48% of last year's registrants. Other factors entering into

this decline of registrations may account for some of the decrease, but the fact is that when fees increased, registrations decreased sharply.

Is it true that doctors are not interested in knowing the real costs of their postgraduate medical education, or willing to pay for it? What is it worth to them? Or do they expect it to be subsidized? What is the answer to this unsolved problem?

There is an acute need for doctors to realize the real cost of postgraduate medical education, and be willing to help solve this perplexing problem. We hope that more organizations will share their findings, and keep accurate records, without concealing overhead expenses. It is the sincere hope of the writer that such sharing of information will soon become a reality.

REFERENCES

1. TROUTWINE, C. W.: *J. M. Education*, 30: 215, 1955.
2. *Idem*: *Canad. M. A. J.*, 75: 221, 1956.

SUMMER INTERNSHIPS: AN AID IN THE TEACHING OF PREVENTIVE MEDICINE TO UNDERGRADUATE MEDICAL STUDENTS*

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THERE HAS BEEN, in recent years, a great interest in the assessment of teaching methods and curriculum content in the fields of public health and preventive medicine. This has been in evidence on the international level[1] and in Canada itself.[2-4] Members of this department have published material in this regard.[5, 6]

Recently, we have reported upon one experiment in the teaching of public health at the postgraduate level. It is realized that summer internships in public health and preventive medicine for undergraduate medical students have been used in certain other centres. However, for us this was an innovation in teaching methods, and the purpose of this paper is to relate the experiences we have had in this regard.

All those who are engaged in the instruction of the medical student face tremendous problems. The whole face of medicine has changed within our lifetime. All of us must be willing to alter the content of our courses and our teaching methods if we are convinced that change is needed to provide the student with a more solid basis for his life's work. The teacher of preventive medicine and public health faces the same problems as his colleagues, but, in addition, he has a number peculiar to his own field.

The first thing he must do is to properly orient himself to the needs of his students. Most teachers in public health and preventive medicine are, because of their training and experience, specialists in public health. Unfortunately, public health and public health practices have only a limited place in the instruction of the medical student. Public health is a specialty and, as such, is a matter for postgraduate instruction. The major task of the undergraduate teacher in medical schools is the inculcation of the preventive attitude, to demonstrate to the student that prevention is an integral part of medicine in all of its fields. This is much more important than the teaching of specific preventive techniques even though these do have a limited place in our teaching program and likely must continue to do so in the future.

The second difficulty we face is the great appeal that clinical subjects have to the student in contrast to the rather more nebulous role in which he sees the application of preventive medicine. Most students when they enter medical school are already oriented towards the healing of the sick and the relief of pain and suffering. Their teaching in the clinical subjects takes place in the hospital where, necessarily, the primary emphasis is on the care of the sick.

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We, in preventive medicine, must constantly search for means to integrate our teaching of the gospel of prevention with the preclinical departments and with hospital teaching which will always form the major area of instruction in the clinical fields. We must be realistic: prevention is primarily an intellectual concept; it does not have the drama or the appeal of the treatment of disease. Thus, we must adapt ourselves to that situation and use every means at our command to integrate our teaching with that of the other departments.

Two other obstacles to the effective teaching of preventive medicine are interrelated and must be overcome if we are to achieve our objective. These are the failure to encourage student participation and the difficulty of showing the student that man is a living member of society rather than a set of signs and symptoms of some particular disease condition. In didactic teaching the student is a passive onlooker whose interest will be in direct relationship to the hurdle of examinations. This is not good enough; he must have the opportunity to be an active participant. Our teaching methods must be such that he has an opportunity to take a personal part in the learning experience. If we are to teach effectively, we must lift the major part of our instruction out of the present classroom atmosphere and into the community.

It is fully realized that summer internships do not provide a complete answer to the problems we have posed. We do think that these internships have much merit and may help to point the way towards modification of the traditional teaching programs which still exist in many schools. There are a number of ways in which the various medical schools of the United States and Canada have attempted to get the student into closer contact with the community and the people in it. All of these methods have to be adapted to local conditions and needs. We have seen the use of total health care programs as a teaching aid, preceptorships with practising physicians and many other devices. Even the time-honoured and often abused "field trip" is still of value if it is used in the proper way. The traditional trip to the waterworks or the incinerator can be made a worthwhile experience if it is used to demonstrate the preventive facilities available in the community and the responsibility of the physician towards them. These summer internships can be made available only to a relatively small number of students but we consider that their effect may well be out of proportion to the few students who are directly involved.

Even though they may not be part of the formal training of the medical student, we feel that there are additional benefits from these summer internships. They exemplify how a university may participate both in direct service and research for the community and how, through co-operative effort, all may benefit. The community health agencies will receive direct professional help and may possibly recruit public health personnel in the future. The university will be given a unique opportunity for teaching.

We have now had five years of experience with summer internships; 14 students have participated in 16 periods of internship. With this background, we felt that enough experience had been gathered to warrant the making of a report that might be of value to other teachers in preventive medicine.

* * *

These internships had their beginning in the summer of 1952 when a student who had completed the second year of his medical-school training was engaged as an epidemiology worker by the Division of Venereal Disease Control of the Provincial Department of Health. One of us (A.J.N.) was at that time the director of that division and required assistance in his research program. The employment of the student was financed through provincial funds. His work proved so successful that during the ensuing year much thought was given to expansion of the program.

It was agreed that these internships could be financed through National Health Grants and that they should be a co-operative effort on the part of federal, provincial, and local health departments and the university. Two types of internship were envisaged: second-year students should be considered for positions involving research activities that would carry on for two summers, and third-year students for projects that would be mainly service in type and could be completed in one summer session.

One of the primary purposes for the allocation of these funds was to be of help to local health services during the summer season when many of the permanent staff were on vacation and as an aid to the carrying out of special projects.

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The university established certain requirements. Each student and the health agency staff member directly supervising his work were asked to submit a critical evaluation of the program at the end of the period of employment. Each student, in addition to the routine work required of him, was encouraged to select a research project for study. The object of the research project was three-fold: to encourage original research under supervision, to provide material for the M.D. thesis which is a requirement for graduation in this university, and, wherever possible, to lead to publication in a scientific journal. During the five years that these internships have been in effect, two students have produced graduation theses,[7, 8] and two papers have been published by them.[9, 10] On graduation, three of these students have received the Health Officers' Prize in Preventive Medicine and Public Health.

During the academic year of 1952-53 it was made known to the third-year students that three internships would be available in rural health units during the summer. Seven applications were received from the class of 60 students. All applicants were interviewed by two staff members of this department. Certain health units were selected to receive interns after consultation with the Provincial Department of Health and the health unit directors. The students began work almost immediately after the completion of the term and, in most instances, worked until the fall opening of the university. They were paid $239 per month and travelling expenses within the health unit area. In addition to the three students sent out to rural health units, the student who had been employed by the Division of Venereal Disease Control in the summer of 1952 was continued in that project at provincial expense.

The same pattern, with certain modifications, has been carried on since 1953. The salary paid has gradually increased to $245 in 1956, and is now financed entirely through National Health Grants. There have always been more applicants than positions available. We have continued to assign students to the Division of Venereal Disease Control on a two-year basis and to rural health units for one summer period. In addition, we now assign a student for two successive summer periods to the Division of Tuberculosis Control and a student to a large urban health department. The rural health units selected each year have varied according to the needs of the health unit and the desire of the director for a student intern. We have deliberately experimented in the placing of our students. For example, we were not certain how well a female student would be received in a rural health unit or how students of different racial origin could be integrated. In no instance did we encounter any difficulties.

What has been accomplished during these five years of student internships? If we are to obtain the answer to that question we will have to assess the reactions of three groups: the health agencies, the students, and the university. In addition, we will have to use as a measure the publications that have come as a result of research done by these students.

The reaction of those in health agencies who have had student interns has been most favourable. In all cases, they felt that the students made a definite contribution to the work of the health facility. They provided a most efficient source of additional professional help. This was most desirable since their arrival coincided with the beginning of summer vacations for staff members. They found that, after a short period of orientation, the students could turn their hand to many of the tasks of the various staff members. The level of training of the students was sufficient for them to cope with most of the problems they encountered. In addition to helping with the routine work of the health facility, it was found that the students could be assigned to special projects. These were problems in which the health agencies had been interested but because of lack of staff or time had been unable to investigate. The reports that the students have rendered have, in many instances, pointed the way to modifications of the programs of the health facilities. In no instance have we had the director of any health facility ask that he be sent no further students. Rather, when we have found it desirable to change the distribution of interns we have always had to explain to directors why we were unable to send them students. The demand for student interns has always been greater than the number available. It is apparent that staffs of health departments find the contact with students a stimulating experience and that even though it does involve some extra work in providing orientation experience for the students, they are more than repaid by the subsequent productive activity of

the interns. One other possible dividend for the health agencies will have to wait for some time for assessment. These internships may well serve as a valuable source for future recruitment of personnel for full-time careers in public health. Already, two students who have now graduated have expressed interest in post-graduate training in public health.

It was emphasized to the students from the outset that the future of the program would in large measure depend upon their reports. They were asked to provide us with constructive criticism. In all cases, we have received excellent reports from these students and we feel that these reports show very accurately the way the students felt about the experience made available to them. It can be said without qualification that the students were most enthusiastic about these internships. Any criticism was definitely helpful to us in planning for the future. Each year we have modified our program, largely on the basis of recommendations from the students. The item that students seemed to appreciate most was the opportunity to see people in their natural environment and to be able to put into practice much of what they had been taught in the classroom and in the hospital. When we first sent students to health units, there was an understandable reluctance on the part of the directors to assign responsibility to students since they were uncertain as to the level of training, the professional competence, and other attributes of the students. However, it was soon apparent that the students could assume considerable responsibility under supervision. Indeed, it was found that they could, after a period of instruction, substitute in a most desirable manner for most of the various categories of staff members. The question of legal responsibility for their actions caused some concern. However, it was considered that the ultimate responsibility rested with the health unit director and that he could delegate his authority. On that basis, students have carried out many procedures: immunization, venoclysis, intramuscular injections, examinations of infants and children, health conferences, etc. The students enjoyed these experiences a great deal and were enabled to see clearly the interrelationship of their clinical training with preventive medicine. Through their contacts with the practising physicians in the community this interdependence of clinical and preventive medicine was further emphasized.

We have already made reference to the theses[7, 8] and the scientific papers[9, 10] that have been published as a result of original research by these students during the summer internships. We feel that these are a valuable contribution to medical knowledge and would not have been possible without these internships. Many other projects were carried out by the students which have not been published but have been of real help to the agencies with whom the students were associated. These projects covered a wide range. Rather than list all the projects carried out by the students over the five-year period, we will use the activities of the students during the summer of 1956 to illustrate the importance of this part of the students' activities.

During the summer of 1956, four students were placed in summer internships. Two students at the end of the second year of instruction were assigned to the Provincial Divisions of Tuberculosis and Venereal Disease Control. They will be employed again in the summer of 1957. One third-year student was sent to a rural health unit, the South Okanagan Health Unit at Kelowna. Another was attached to the Metropolitan Health Committee of Greater Vancouver.

The student assigned to the rural health unit carried out a wide range of projects. This unit is planning an experimental rheumatic fever prophylaxis program. The student surveyed the incidence of this disease from 1952 to 1956 in co-operation with the hospitals and practising physicians in the area. From her survey, specific recommendations were made for the conduct of a prophylactic program. This was her major study but she carried out certain other surveys: a study of staphylococcal infections in one of the hospitals, a sanitary survey of the city of Penticton, a study of the vital statistics of the area, and a review of rattlesnake bites in the area over a number of years.

This was the first time that we had assigned a student to an urban health department. The student with the Metropolitan Health Committee of Greater Vancouver carried out several projects. He analyzed material in regard to staphylococcal infections in hospitals and his report will be used by the committee in this community which is considering this problem. His second project will provide him with material for his

M.D. thesis. He carried out a review of histories of children at the Jericho Hill School for the deaf and blind, with special reference to the causative factors leading to deafness in children. This review had been mooted for several years but never carried out. The survey was done in consultation with the otolaryngologist who serves the school.

The second-year students who were appointed to the Provincial Divisions of Tuberculosis and Venereal Disease Control spent the summer primarily in planning and organizing research projects which will be carried out next year. The student in Venereal Disease Control is concentrating his efforts in two fields: a study of the facilitation process in venereal disease and an evaluation of serologic screening as a case-finding measure for syphilis. It is of interest that the division has provided this student with a small office so that he may carry on with investigations at his convenience during the academic year.

During the summer the student in Tuberculosis Control attempted to evolve a method for measuring the menace presented to the community by the individual with positive sputum and investigated some aspects of the treatment of tuberculosis on an outpatient basis. He also assembled a bibliography on avian tuberculosis infection. Next year it is proposed that he will do a follow-up study on patients discharged from sanatorium to compare with those patients he studied this summer who had been treated as outpatients. He will also attempt to develop more efficient methods for survey and follow-up of residents of the skid-row area in Vancouver.

These research projects carried out during 1956 are typical of the investigations made by the students during the past five years. We feel that they have made a distinct contribution and that they themselves have benefited by the opportunities provided to them for research, for practical experience, and for seeing the complete interdependence of the clinical practitioner and the health agencies in the community.

Finally, what have we in the university gained from these internships? We believe that every medical school and every department in every medical school has three responsibilities. These are teaching, research and community service. We consider that these summer internships in preventive medicine have paid us dividends in all three fields. We have already made reference to the research conducted by these students, the publications that have resulted and the benefits that have accrued to the health agencies through modifications to existing programs as a result of studies made. These internships have made it possible for the university to be of real service to the community. We have provided the health agencies with a carefully selected group of students who have made a very real contribution to the health of the community. We have stressed that we are constantly searching for opportunities to take our teaching of preventive medicine out of the classroom and into the community and to find situations where students can actively participate in the learning experience. These summer internships have provided that opportunity for a limited number of students whose influence may well outweigh their small numbers and their experience may point the way toward further modifications of our teaching program.

SUMMARY

We have presented our experience during the past five years with summer internships in preventive medicine for undergraduate medical students in the University of British Columbia. We have been very much impressed with their value and we would hope that they can not only be continued but also that they may be expanded in future years. The following reasons would appear to justify their use by other medical schools:

1. Students are enabled to see the problems of health and disease in a much broader perspective. The social aspects of medical practice are brought home to them much more clearly.

2. The opportunity is made available to the student to see the interrelationship of clinical and preventive medicine.

3. The conduct of original research by the student is of value to the student and to the community.

4. The university does a real community service through the provision of the students to the health agencies.

5. The health agencies are benefited both in terms of actual work done and by the original research carried out by the students.

Throughout this paper we have referred to the various groups who have made these internships possible. We would, however, at this time, like to express our thanks to all of these. The Department of National Health and Welfare, through National Health Grants, paid the salaries of these students. The Health Branch of the British Columbia Department of Health and Welfare, by their wise counsel and wholehearted co-operation, helped to make these internships a valuable experience. Finally, we are most grateful to the staff members in the divisions of the Health Branch and in local health departments who not only made our students welcome but also provided them with a most interesting and fruitful portion of their medical education.

REFERENCES

1. Conference of Professors of Preventive Medicine: Preventive Medicine in Medical Schools, Report of Colorado Springs Conference, November 1952, Association of American Medical Colleges, Chicago, 1953.
2. STEWART, C. B.: The Teaching of Public Health and Preventive Medicine in Canadian Medical Colleges, Report to the 13th Annual Meeting of the Association of Canadian Medical Colleges, Laval University, Quebec City, October, 1955.
3. Canadian Medical Association: Public Health Committee Report, *Canad. M. A. J.*, 73: 348, 1955.
4. *Idem*: *Ibid.*, 75: 360, 1956.
5. ELLIOT, G. R. F.: *Ibid.*, 74: 457, 1956.
6. MATHER, J. M. *et al.*: *Canad. J. Pub. Health*, 47: 293, 1956.
7. ANDERSON, D. O.: A Sociological Analysis of Venereal Disease Repeater Patients, Thesis for M.D. Degree, University of British Columbia, 1954.
8. SLEATH, G. W.: An Evaluation of a New Triple Penicillin Salt in the Treatment of Acute Gonorrhœa, Thesis for M.D. Degree, University of British Columbia, 1956.
9. ANDERSON, D. O. AND NELSON, A. J.: *Canad. J. Pub. Health*, 45: 381, 1954.
10. SLEATH, G. W. AND NELSON, A. J.: *Ibid.*, 47: 383, 1956.

CANADIAN SCHOOLS OF MEDICINE

The following general information regarding Canadian schools of medicine has been kindly supplied to us. Fuller details are available on request from each school.—EDITOR.

DALHOUSIE UNIVERSITY

Faculty of Medicine

Halifax, Nova Scotia

C. B. STEWART, M.D., Dean

THE FACULTY of Medicine of Dalhousie University was established in 1868, 50 years after the founding of the University. Difficulties over finances and space led to its separation from the University in 1875 and the establishment of the independent Halifax School of Medicine. In 1885 this was affiliated with the University and in 1911 became once more an integral part of Dalhousie as the Faculty of Medicine.

Dalhousie University is a privately endowed institution, but government grants are provided for the Faculties of Medicine and Dentistry. These grants have been made by the Governments of Nova Scotia and Newfoundland since 1947 and New Brunswick and Prince Edward Island since 1949. They constitute less than 20% of the income of the two faculties.

Three years of premedical study are required before admission to Medicine. Preference is given to candidates who complete all three premedical years at a recognized college or university, although a few present five credits from senior matriculation. The premedical years include 15 courses, 10 of which are required and five optional. Of the required classes three are in chemistry, two in biology, two in English and one each in physics, mathematics and history. When the premedical requirements were increased two years ago, an attempt was made to place emphasis on the arts subjects by requiring four of the five optional courses to be in the humanities or social sciences.

The medical course at Dalhousie is of five years' duration. The first four years are in university and the fifth is a rotating internship in affiliated hospitals. The academic year extends from early September to mid-May in the first four years and the internship is of 12 months' duration.

Dalhousie University has retained control of the fifth-year internship in order to ensure a balanced rotation. All students have two months on a general medical service, two months on medical specialties, two months on a general surgical service, two months on surgical specialties (including one month of emergency surgery), two months on obstetrics and two months on pædiatrics. Outpatient as well as inpatient training is included on all services. The M.D. degree is granted on completion of the rotating internship. Conjoint examinations are held at that time with the Medical Council of Canada and the Provincial Medical Board of Nova Scotia. The degree and licence to practise are therefore received in the same year. The rotating internship is also accepted by the Royal College of Physicians and Surgeons as one of the years qualifying for certification or fellowship. Dalhousie University will continue to grant the dual degree of M.D., C.M. until 1959. Following that year the degree will be M.D.

The chief teaching hospitals are the Victoria General Hospital (549 beds), Halifax Children's Hospital (204 beds), Grace Maternity Hospital (100 beds and 100 bassinets), Camp

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Hill Hospital (D.V.A.) (550 beds), Halifax Tuberculosis Hospital (126 beds), and the Dalhousie Public Health Clinic (outpatient services).

The student pays tuition and other fees of $405 in the first four years and $380 in the fifth year. Five entrance scholarships of $500 each are provided annually, two to residents of the mainland of Nova Scotia, one to a resident of Cape Breton, one to a resident of New Brunswick, and one to a resident of Newfoundland or Prince Edward Island. Several bursaries and prizes are also awarded each year and a fund is available from which loans are made to students on application.

In selecting students for admission to the Faculty of Medicine, priority is given to residents of the four Atlantic Provinces, but a small number are accepted from the other provinces of Canada, the United States and the British West Indies. The first-year class usually numbers 58, and in recent years the number of graduates has varied from 48 to 54.

A complete revision of the curriculum has been carried out and several important changes were initiated in the 1955-56 session, primarily designed to increase interdepartmental teaching and to change the emphasis on certain subjects in accord with modern trends in medical education. Each year is divided into three terms of 11 weeks with an interval of one week for examinations. In the first term of the first year emphasis has been shifted from anatomy, formerly the major subject for beginners, to biochemistry. The clinical departments participate in some of the clinical teaching of the first and second years, primarily as a means of motivating the students by demonstrating the practical value of the basic sciences. In turn, the interdepartmental teaching carries the basic sciences courses forward into the final years, both as a review of the fundamental principles and as a demonstration of clinical application.

Dalhousie Medical School carries out a very active program for the continuing education of physicians in the four Atlantic Provinces. Visiting lecturers are brought to Halifax and to other centres of the four Atlantic Provinces. Dalhousie staff members lecture or present clinics before local medical societies or other medical groups. Intensive special courses of one week's duration are given to small groups of approximately 10 practitioners by the Departments of Surgery, Medicine, Obstetrics, Pædiatrics and Anæsthesia. In several areas near Halifax groups of practitioners have enrolled for an organized course of lectures, clinics and demonstrations held at weekly intervals and attended by two visiting Dalhousie teachers. All aspects of this postgraduate program have been growing rapidly.

Medical research has been increasing in importance. In the past year the number and monetary value of assisted research grants was almost double that of the preceding year. An additional full-time research worker, supernumerary to the teaching staff, was appointed during the past year in biochemistry on the newly established system of medical research associates of the National Research Council.

The teaching laboratories of the Departments of Physiology, Pharmacology and Biochemistry were completely renovated during 1956 and redesigned to permit the three departments to use the same laboratory on a co-operative basis. This experiment has worked out very satisfactorily. Plans are now being drawn for new laboratories in Pathology and Bacteriology.

LA FACULTÉ DE MÉDECINE DE L'UNIVERSITÉ LAVAL DE QUÉBEC

J. B. JOBIN, M.D., Doyen,
Faculté de Médecine

CETTE FACULTÉ fut fondée en même temps que l'Université Laval, en 1852. Avant ce temps, les clercs médecins se formaient sous la tutelle de médecins déjà formés qu'ils suivaient dans leur pratique privée. En 1847, fut fondée l'Ecole de Médécine Incorporée de la Cité de Québec. Elle devait être remplacée en 1852 par l'école de médecine actuelle. Dès la fondation de l'Ecole, on nomme un certain nombre de professeurs, on adopte les premiers règlements et on s'occupe de l'organisation matérielle des locaux. C'est à partir de cette époque que les médecins commencèrent à aller en France parfaire leur formation médicale.

En 1854, la faculté commence son enseignement qui comporte des leçons théoriques sur les matières fondamentales et de l'enseignement clinique à l'Hôtel-Dieu de Québec et à l'Hôpital de la Marine. Les élèves doivent même accompagner les médecins dans leurs visites à domicile, assister aux autopsies et suivre un cours de gériatrie. Quinze ans plus tard, à l'hôpital de la Miséricorde, un service régulier de maternité est organisé. En 1866, l'Université organise à l'Hôtel-Dieu de Québec une consultation externe et une clinique pour les maladies des yeux et des creilles.

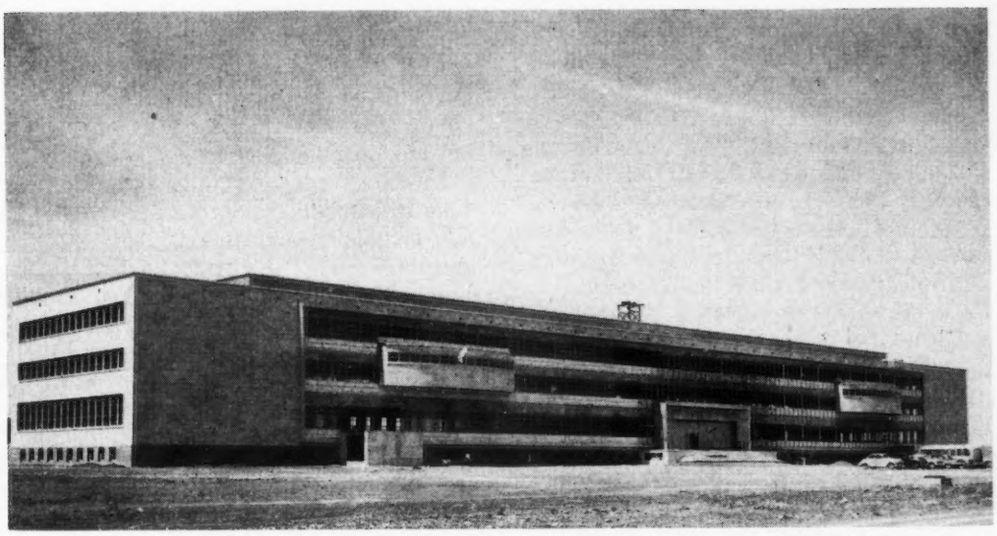
En 1875, notre faculté fut reconnue par le Collège Royal d'Edimbourg. Puis on vit s'organiser progressivement toute une série de services et de cours dont je donne ci-après la liste et la date de leur début:

1878: Cliniques de pédiatrie et de gériatrie.
1905: Clinique de puériculture à la Crèche St-Vincent-de-Paul (Garderie pour Enfants).

1907: Les laboratoires de biochimie, de bactériologie et de pathologie sont réorganisés.
1914: Clinique des maladies contagieuses et service d'électrologie.
1918: Ouverture de l'Hôpital Laval (Pour les tuberculeux)
1922: L'Hôpital St-Michel-Archange (pour malades mentaux) ouvre ses portes à l'enseignement.
1924: On construit une nouvelle Ecole de Médecine et on réorganise complètement les départements de biologie, embryologie, histologie, anatomie, physiologie, biochimie, anatomie pathologique, la bibliothèque et les services administratifs.

En 1942, on organise un concours de l'agrégation pour la sélection des professeurs. En 1947, un nouvel hôpital est affilié, celui de l'Enfant-Jésus. En 1948, s'organisent dans les hôpitaux universitaires des cours postscolaires en chirurgie, anesthésiologie, radiologie, tuberculose, anatomie chirurgicale, psychiatrie et dermato-syphiligraphie.

Ces cours post-gradués procurent à leurs élèves une formation complète qui leur permet habituellement de passer avec succès les concours de "Fellow" du Collège Royal des Médecins et Chirurgiens du Canada, et celui de Spécialiste du Collège des Médecins et Chirurgiens de la province de Québec.



La nouvelle école de médecine dont on prendra possession en septembre 1957.
The new medical school of Laval, which will be opened in September 1957.

Des professeurs de carrière sont alors attachés à chacun de ces départements et même l'on fait venir de France un certain nombre de professeurs qui contribuent à accentuer le caractère français de notre enseignement.

Pendant ce temps, les services cliniques s'étaient développés à la cadence des progrès du temps et l'ouverture de la Clinique Roy-Rousseau (maladies nerveuses et mentales), en 1926, et celle de l'hôpital du St-Sacrement (hôpital général), en 1928, fournirent des facilités cliniques additionnelles très appréciables.

En 1932: Fondation de la Société Médicale des Hôpitaux Universitaires de Québec. Cette Société se réunit deux fois par mois et elle publie ses travaux dans le "Laval Médical". Les créations hospitalières, la reconstruction de l'école de médecine, la réorganisation de l'enseignement et l'impulsion scientifique dont on a été témoin à cette époque sont en grande partie dues à la valeur exceptionnelle du doyen Arthur Rousseau.

En 1942, la biochimie se forme en un département. En 1943, l'école des infirmières est fondée.

En 1948, le Conseil Universitaire fonde un département de psychiatrie rattaché à la faculté de médecine et responsable du traitement des maladies mentales dans la région et de la formation des spécialistes en psychiatrie.

En 1949, le Conseil Universitaire décide de construire, sur la cité universitaire, à Ste-Foy, un Pavillon facultaire pour 1000 étudiants, un hôpital universitaire de 600 lits et une école d'infirmières. La même année, l'Institut du Cancer de l'Université Laval est fondé et des cliniques anti-cancéreuses sont organisées dans les différents hôpitaux affiliés à l'Université. En 1950, le Conseil Universitaire constitue un exécutif au Conseil de la Faculté de Médecine. En 1951, la faculté affilie une école de technologie médicale dont le directeur est le Dr Rosaire Gingras. En 1953, l'Hôtel-Dieu St-Vallier de Chicoutimi, l'Hôpital St-Joseph de Trois-Rivières et l'Hôpital St-François-d'Assise de Québec sont affiliés à l'Université Laval: Actuellement, la Faculté dispose de douze hôpitaux qui servent à l'enseignement clinique.

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A l'automne 1954, la construction du nouveau pavillon de médecine commence et d'après nos prévisions actuelles, il sera mis à notre disposition au mois de septembre 1957. En 1955, l'année pré-médicale qui existait depuis 1951 est supprimée et l'enseignement qui y était dispensé est intégré dans les quatre années d'enseignement qui précèdent l'internat rotatoire. Le système des examens est revisé et tient compte des examens périodiques qui représentent la moitié de la note des examens écrits.

Au cours de l'année 1955-1956, les départements de médecine, de chirurgie, de neuro-psychiatrie, d'électro-radiologie ont été organisés et des directeurs ont été nommés à chacun de ces départements. Ceux-ci ont la responsabilité de coordonner les programmes d'études et de voir à leur application tant pour l'enseignement clinique que pour l'enseignement théorique.

En 1957, notre faculté compte 648 étudiants, quatre professeurs émérites, 45 professeurs titulaires, 44 professeurs agrégés, 103 assistants-universitaires et trois professeurs auxiliaires. Parmi ce personnel enseignant, il y a au-delà de 50 Fellows du Collège Royal des Médecins et Chirurgiens du Canada. La bibliothèque de la faculté dispose de 27,000 volumes et de 325 revues scientifiques.

La cinquième année du cours ne comporte pas de leçons théoriques: elle est consacrée à un internat rotatoire qui se fait sous la surveillance de la faculté dans les hôpitaux affiliés à notre Ecole de Médecine. Dans chacun des principaux hôpitaux généraux, l'Ecole de Médecine nomme et paye un moniteur qui consacre tout son temps à la surveillance du travail clinique et des études des internes juniors.

Les départements de biochimie, de bactériologie, de pathologie, de physiologie et d'anatomie complètent rapidement leurs équipes et témoignent de leur activité scientifique par un nombre impressionnant de publications scientifiques. D'ici très peu d'années, nos équipes seront complètes et le déménagement dans les nouveaux locaux favorisera grandement et l'enseignement et la recherche scientifique.

Si autrefois l'entraînement post-universitaire de nos professeurs avait été fait presqu'en totalité en France, il n'en est plus de même aujourd'hui puisque pour un bon nombre d'entre-eux leur entrainement post-universitaire se fait maintenant en Amérique du Nord.

Et pour terminer, je suis heureux d'avoir l'occasion de rendre hommage à nos professeurs et à nos hôpitaux d'enseignement parce que leur contribution à l'enseignement est d'autant plus admirable qu'elle est en très grande partie bénévole.

UNIVERSITÉ DE MONTRÉAL

Faculty of Medicine
Montreal, Quebec

WILBROD BONIN, M.D., Dean

THE UNIVERSITY of Montreal Faculty of Medicine, incorporated in 1920, is a component school of the Université de Montréal, and is under the full jurisdiction of the University, a private institution. It is located in the same building as most other component schools of the University, 2900 Mount Royal Boulevard, Montreal. Legal ownership of the School is vested in the Board of Governors of the Université de Montréal. The faculty is headed by a dean, a vice-dean, a secretary, and an assistant secretary. The dean or vice-dean may be director of studies. Present officers are: Dr. Wilbrod Bonin, Dean and Director of Studies; Dr. Roger Dufresne, Vice-Dean; Dr. Joseph-Luc Riopelle, Secretary. Instruction in the faculty is in French.

Entrance requirements are, among others: (a) a sufficient knowledge of French; (b) a B.A. degree of the University of Montreal, or its equivalent, or the brevet of the College of Physicians and Surgeons of the Province of Quebec; (c) a preparation in premedical sciences (physics, chemistry, biology) of the same level as section B of the University of Montreal B.A. degree. Notwithstanding these entrance requirements, the Faculty reserves its right to select only the better candidates. Completed application forms must be sent before the first of July of the year of contemplated admission.

The minimum period of professional training required by the University of Montreal as a qualification for the M.D. degree is five years, including one year of rotating internship in approved hospitals.

The medical curriculum includes instruction in laboratory courses in basic medical sciences at the University building, and clinical teaching in approved hospitals. There are four sessions of 32 weeks each, exclusive of examination periods. The sessions begin on the second Tuesday of September. Fifth-year internship begins on June 1 and ends on May 31 of the following year. A program of graduate work leading to M.Sc. and Ph.D. degrees is also provided by the Faculty of Medicine.

Three schools administered by the Faculty of Medicine, each of them with a Director and an Education Committee, give courses in dietetics; medical technology; physiotherapy; occupational therapy; speech therapy and audiology: namely, the Institute of Dietetics, the School of Medical Technology, and the School of Rehabilitation.

Two series of postgraduate courses leading to a certificate (Anæsthesiology, Neuro-Anatomy and Neuro-Physiology) have been organized by the Faculty. The program of study of anæs-

thesiology comprises a period of training of two years in anæsthesia, as well as a number of lectures, seminars and laboratory sessions on basic medical sciences. The course in neuro-anatomy and neuro-physiology comprises 50 hours of lectures and laboratory sessions. The last-named course is given every two years.

Fees for the medical curriculum are $400 a year for Quebec residents. There are added charges for students' associations, etc. Fees for graduate courses are $300 a year.

The following hospitals are used for clinical teaching: Hôtel-Dieu, Notre-Dame, Miséricorde, Ste-Justine, Sacré-Cœur, St-Luc, Queen Mary Veterans' Hospital, Général de Verdun, Pasteur, Ste-Jeanne-d'Arc, St. Joseph Sanatorium, and Maisonneuve.

For medical students there are three scholarships of the University of Montreal. A considerable number of scholarships of the Quebec Ministry of Youth and Social Welfare are allocated by the Vice-Rector of the University of Montreal.

McGILL UNIVERSITY

Faculty of Medicine
Montreal, Quebec

LLOYD G. STEVENSON, M.D., Dean

McGILL UNIVERSITY, established by Royal Charter in 1821, is privately endowed and the trustees of its funds are the Board of Governors who constitute "The Royal Institution for the Advancement of Learning."

The Faculty of Medicine came into existence in 1829, when the Montreal Medical Institution, founded at the Montreal General Hospital in 1824 and the first medical school in Canada, was transferred to the University.

Candidates for admission to the Faculty of Medicine must complete a minimum of three full years of study in a recognized college or faculty of arts and science in harmony with the requirements for the degree of B.A. or B.Sc. at the college where the courses are taken. During this period of premedical study the candidate must complete full courses, with laboratory work, in general and organic chemistry, physics and zoology. If possible, the candidate should take the Medical College Admission Test conducted by the Educational Testing Service.

The course of study in medicine is of four years' duration. Each session begins early in September and continues until the middle of June, except in the final year when it is a month less in order that the degree of Doctor of Medicine, Master of Surgery (M.D., C.M.) may be awarded at the regular University Convocation at the end of May. Graduates in medicine are required to complete at least one year of internship in an approved hospital before they become eligible for a licence to practise medicine. The annual tuition fee in medicine is $650.

The clinical facilities of a number of Montreal hospitals are available to the Faculty of Medicine. The Montreal General, Royal Victoria, and Montreal Children's Hospitals are the three general teaching hospitals. The Montreal Neurological Institute, Royal Victoria Montreal Maternity Hospital, Royal Edward Laurentian Hospital, Verdun Protestant Hospital, and the Alexandra Hospital for Infectious Diseases provide clinical teaching in special fields. The University is most fortunate in having such a large amount of excellent clinical material made available for teaching of its students by these institutions. An opportunity for living-in by students in the senior year is provided by the general teaching hospitals when the student is in the medicine, surgery, and obstetrics rotations.

Opportunities for postgraduate instruction exist in all departments of the Faculty of Medicine. In the basic medical sciences such instruction is offered under the direction of the Faculty of Graduate Studies and Research leading to M.Sc and Ph.D. degrees. A number of the clinical departments offer organized postgraduate courses of some years' duration leading to a diploma in the appropriate field, such as Internal Medicine or Psychiatry, from McGill University. A course of study leading to a Diploma in Tropical Medicine and Hygiene is offered by the Department of Health and Social Medicine.

The needs of the medical student and graduate are well served by the Medical Library, which contains more than 80,000 bound volumes and extensive collections of other items. The chief value of the library is in its periodical collection, and relatively little is lacking in the way of important journal literature in all languages. The ophthalmological section is particularly outstanding.

A unique possession of McGill University is the Osler Library. This special library of the history of medicine and science was bequeathed by Sir William Osler to his alma mater, and its collection of nearly 10,000 volumes is outstanding in this field.

Financial assistance for worthy and needy students is available in limited amount (a maximum of $500 yearly) through scholarships such as the Keith Hutchison and C. B. Keenan Memorial Scholarships and other smaller scholarships and bursaries established for this purpose. Limited assistance in the form of loans, repayable after graduation, is available to needy students with satisfactory academic standing, but not of scholarship calibre. Such awards cannot normally be considered until a student has established his competency by completion of at least one year of medical study.

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UNIVERSITY OF OTTAWA

Faculty of Medicine
Ottawa, Ontario

A. L. RICHARD, M.D., Dean

THE SCHOOL was organized in September 1945 as the Faculty of Medicine of the University of Ottawa, a private institution. The administration of the Faculty is conducted by an Executive Council and a Faculty, both of which are presided over by the Dean. The Dean is responsible to the Rector in administrative matters, including staff appointments, and to the Senate of the University in academic matters.

The School is co-educational. The minimum academic requirement for admission to the first premedical year is Ontario Grade XIII honour matriculation, or equivalent certificates. Students who have obtained their bachelor's degree in arts or in science and who have completed the required courses in biology, chemistry and physics may be admitted to the first year of medicine.

The course consists of six sessions, comprising two premedical years and four years of medicine, after which the degree of Doctor of Medicine is granted.

The tuition fee for Canadian students is $350 for the premedical years, and $475 for each of the other years. Non-Canadian students add $300 to the regular fees. Postgraduate courses are offered leading to a M.Sc. and a Ph.D. degree in preclinical subjects. A series of postgraduate conferences is also arranged for practising physicians.

The chief teaching hospital is the Ottawa General Hospital, containing approximately 600 beds. Appointments to the medical staff are made by the governing body of the hospital on the recommendation of the Rector in Council. The heads of the clinical departments are also the heads of corresponding departments in the faculty. Additional clinical facilities are found in the Veterans' Pavilion at the Ottawa Civic Hospital, Saint Vincent's Hospital, the Royal Ottawa Sanatorium and the Rockliffe Military Hospital.

Fourth-year students engage in field work two afternoons a week which provides domiciliary clinical teaching in co-operation with the Victorian Order of Nurses and the public health nurses of the municipal department. These students are thus given the opportunity of seeing patients in the setting of the home and family.

Registration for 1956-1957 is 285.

QUEEN'S UNIVERSITY

Faculty of Medicine
Kingston, Ontario

G. H. ETTINGER, M.D., Dean

QUEEN'S UNIVERSITY is an endowed institution administered by a Board of Trustees who are elected primarily by its graduates. Its income is made up of fees from students, interest on endowments, and grants from the provincial and dominion governments. The Faculty of Medicine is administered by a faculty board, consisting of the principal, vice-principal, dean, professors, and associate and assistant professors. The faculty selects the students, conducts the teaching and examinations, and recommends to the Senate those whom it considers worthy to receive degrees in medicine. The Senate, a body consisting of the principal, vice-principal, faculty deans and elected members from each faculty, awards all university degrees, and determines all matters of an academic nature, including the approval of recommendations which come from the various faculties.

For admission to the Faculty of Medicine in 1957 the candidates must have Grade XIII matriculation standing, or equivalent, in English, a second language, physics, chemistry, two papers in mathematics, one of which should be trigonometry, and another optional subject. Sixty-four freshmen are admitted annually.

The course of six years is divided into two years of pre-medicine and four years of medicine. Following graduation, it is planned that the student will be required to spend one year at a rotating internship in a teaching hospital approved by the University, before he is given a certificate of completion of studies.

A limited number of students who have taken their premedical education in the Faculty of Arts in this or another university will be accepted for the first medical year.

The teaching hospitals in Kingston are: the General Hospital (483 beds), the Hôtel-Dieu (280 beds), St. Mary's Hospital (for chronic illness—116 beds), Ongwanada Sanatorium (for tuberculosis—160 beds), the Ontario Hospital (for mental illness—1000 beds), and the Kingston Military Hospital (125 beds). In Ottawa the Civic Hospital provides 900 beds.

Opportunities for research and graduate training are available in the basic medical and the clinical departments, and may be supplemented with teaching fellowships and clinical tutorships; the latter are offered in the Ottawa Civic Hospital as well as in Kingston. A two-year course in medical radiology is open to graduates of any Canadian medical school, and leads to a diploma in either diagnostic—D.M.R.(D)—or therapeutic —D.M.R.(T)—radiology.

The degrees offered to undergraduates are M.D., C.M. After 1960 the M.D. alone will be awarded. Graduate degrees available are M.Sc. (Med.) and Ph.D.

The fees are: sessional fee for premedical undergraduate, $350; for medical undergraduate, $500; student interest fee (including health service), approximately $45; sessional fee for M.Sc.(Med.) and Ph.D., $250; D.M.R. fee, $250; degree fee, M.Sc.(Med.), $20; degree fee, Ph.D., $50.

Both men and women are admitted to the Faculty of Medicine. In the first year all women and a number of the men are housed in University residences. The University maintains a housing bureau and can advise students as to suitable boarding and lodging houses. Women not in residence may obtain meals at Ban Righ Hall, and men may be served in the cafeteria at the Students' Memorial Union. The average cost of room and meals is from $15 to $18 a week.

Entrance and matriculation scholarships varying in value from $30 to $1500 are open to candidates for admission to medicine. Details may be obtained from the University Registrar. In addition there are bursaries including Dominion-Provincial Student Aid Bursaries and the Atkinson Charitable Foundation Bursaries. Applications for bursaries from these funds should be made through the high school principal. Reuben Wells Leonard Bursaries are also available; information should be obtained from the Toronto General Trusts Corporation, Toronto.

A number of scholarships and prizes are awarded at the conclusion of each undergraduate year, some of which are more than sufficient to pay the class fees. The total sum of these exceeds $12,000. A University loan fund offers help in meeting minor financial distress.

UNIVERSITY OF TORONTO

Faculty of Medicine
Toronto, Ontario

J. A. MACFARLANE, M.B., Dean

THE MEDICAL SCHOOL of the University of Toronto is a faculty of that university, and as such receives support from the Government of Ontario. It also receives funds from the fees paid by students, and from private endowments.

Candidates for admission to the first premedical year must have passed the Grade XIII examinations of the Department of Education of Ontario (or their equivalent) in the following subjects: English (2 papers), chemistry, physics, mathematics (2 of algebra, trigonometry, geometry), a foreign language (2 papers), and one other subject which may be chosen from mathematics, history, botany and zoology, or another foreign language.

In the two premedical years the student studies physics, chemistry, zoology, comparative anatomy, and psychology. He also takes two years of English, two years in either philosophy or history, and two years in another subject of his own choosing from a limited list including mathematics, botany, and the humanities.

The number of students admitted to the first premedical year is 125. For the most part, these students come from the Province of Ontario. The class is increased to 150 in the first medical year by the admission of students who have taken a degree in arts or science and have included in their course inorganic and organic chemistry, physics, biology, and comparative anatomy, as well as English. A limited number of applicants are admitted at this level from other universities in Ontario, from other provinces in Canada, and from the British Commonwealth.

The professional course consists of four years, the first two of which are devoted to the preclinical sciences, with the clinical work starting during the second year and continuing through the third and fourth years. The instruction in the final year is carried on almost entirely in the wards, laboratories and outpatient departments of the hospitals affiliated with the University. These include three general hospitals—the Toronto General, St. Michael's, and the Toronto Western; the Hospital for Sick Children; and the Toronto Psychiatric Hospital. The facilities of Sunnybrook Hospital and the Toronto Hospital for Tuberculosis are also used for postgraduate training.

The fees in the premedical years are $374 for men and $361 for women. In the first three medical years they are $591.50 for men and $578.50 for women; in the final year they are $601.50 and $588.50 respectively.

Limited financial aid is available to students from the University bursary fund, from Dominion-Provincial bursaries provided by the government, and from the Atkinson Foundation. There are also two loan funds, one established by the W. K. Kellogg Foundation for students in the upper years, and the other made available by the Medical Alumni Association. There are some forty other scholarships and bursaries from endowed funds and bequests, which amount to approximately $9000. In this latter group are included seven scholarships and several bursaries provided by the Medical Alumni Association.

The average number of students graduating each year is 150. There are at present approximately 6000 living graduates of the school.

The degree granted by the University on completion of the course is Doctor of Medicine. Before 1930 the degree given on graduation was Bachelor of Medicine. The degree of Bachelor of Science (Medicine) is conferred following a

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year's special work devoted to research in one of the basic science departments of the Faculty. The degree of Master of Surgery is awarded to graduates in medicine who have passed the examinations for fellowship in surgery of the Royal College of Physicians and Surgeons of Canada (or the Royal College of Surgeons of England, Edinburgh or Australia); who have completed three years' postgraduate work in surgery, and at least one year's training in the teaching hospitals of the University of Toronto. Candidates for this degree must submit a satisfactory thesis, and pass an oral examination on this thesis.

The postgraduate program of the school includes diploma courses in Public Health, Industrial Hygiene, Psychiatry, and Medical Radiology, as well as organized graduate courses in Anæsthesia, Medicine, Obstetrics and Gynæcology, Ophthalmology, Otolaryngology, and Surgery. Short refresher courses for general practitioners are given annually, and the members of the teaching staff take part in various courses sponsored by the Medical Alumni Association and the Ontario Medical Association. An advanced graduate course in Medicine, Surgery, and Obstetrics and Gynæcology, lasting six weeks, is given each autumn. Special courses, lasting one week, are usually given each year by the Departments of Ophthalmology and Otolaryngology, either alone or in collaboration. A program of decentralized postgraduate medical education (formerly supported by the W. K. Kellogg Foundation and now by the University and the local groups concerned) has been carried out successfully during the past five years. Under this arrangement, senior teachers in the school go out to six different centres in the province and conduct clinics on the cases presented by the doctors in the community.

The Faculty of Medicine also administers the Division of Physical and Occupational Therapy, and approximately 225 students are enrolled in the three-year course leading to the Diploma in Physical and Occupational Therapy.

The Department of Art as Applied to Medicine is under the direction of the Faculty. It not only serves as a department of medical illustration for the school, but at the same time provides training for medical artists in a three-year course of study leading to the Diploma in Art as Applied to Medicine.

UNIVERSITY OF WESTERN ONTARIO

Faculty of Medicine
London, Ontario

J. B. COLLIP, C.B.E., M.D., F.R.S., Dean
G. E. HOBBS, M.D., Assistant Dean

THE FACULTY OF MEDICINE, University of Western Ontario, has been in continuous existence since the first classes were held in 1882. Originally operating as a joint stock company, this was discontinued and the Faculty of Medicine came under the direct control of the same Board of Governors as the rest of the University in 1912, and moved to the present medical building in 1921.

The University of Western Ontario is a private university but in receipt of government grants in common with other universities with faculties of medicine in the province.

The course leading to the degree of Doctor of Medicine requires a minimum of six years. The teaching is provided for two years in the Faculty of Arts and four years in the Faculty of Medicine. In the Faculty of Arts the first year is taken in common with all sciences. The majority of students then proceed to a second premedical year where the subjects and content have been modified to be more relevant to medicine. Arrangements are made to allow a limited number of students with other premedical backgrounds to enter the medical course.

Grade XIII standing in English, mathematics (3 papers), or algebra and geometry plus botany or zoology, chemistry, physics, and one other language is required for admission to the premedical course. During the two premedical years teaching is provided at the campus of the University. In the four medical years teaching is carried out in the Faculty of Medicine building, a section of the Meek Laboratory at Victoria Hospital, and affiliated hospitals. The Faculty of Medicine building is located in the vicinity of Victoria Hospital, near the centre of the city and some distance from the main buildings of the University.

The tuition fees are $375 for each of the two premedical years and $575 for each of the four years in the Faculty of Medicine.

Clinical teaching is carried out in Victoria Hospital, War Memorial Children's Hospital, Westminster Hospital, St. Joseph's Hospital, St. Mary's Hospital, Beck Memorial Sanatorium, the Ontario Hospitals in London and St. Thomas, and Bethesda Home and Hospital.

A large number of scholarships and awards are available, as well as a substantial student loan fund.

Funds are available to bring outstanding lecturers to the Faculty of Medicine each year in medicine, surgery, pathology, and psychiatry.

Facilities are available for training in both the clinical specialties and basic sciences. Inquiries should be directed to the department concerned.

UNIVERSITY OF MANITOBA

Faculty of Medicine
Winnipeg, Manitoba

LENNOX G. BELL, M.D., Dean

THE UNIVERSITY OF MANITOBA, which is a provincial institution, confers the degree of Doctor of Medicine. Seventy-two students are admitted to the Faculty of Medicine annually. For admission, following junior matriculation three premedical years in the Faculty of Arts and Science are required. The course in the Faculty of Medicine is four years, consisting of two years largely devoted to the preclinical subjects, a third year in which instruction is mainly clinical, and a fourth year in which clinical instruction is largely carried out at the bedside. The chief teaching hospitals are the Winnipeg General Hospital, St. Boniface Hospital, Children's Hospital of Winnipeg, and Deer Lodge Veterans' Hospital. The main university buildings are in Fort Garry, and the buildings of the Faculty of Medicine are adjacent to the Winnipeg General Hospital. Fees in the Faculty of Medicine are $482.00 a year. Dr. David A. Stewart Memorial Scholarships of a value of from $200 to $450 annually are available to a limited number of students. Assistance may also be obtained from the W. K. Kellogg Student Loan Fund and from Dominion-Provincial Youth Training Scholarships. Scholarships of smaller amounts are also available.

Outstanding features of the Faculty of Medicine are: an excellent library housed in a new wing, and a large museum of pathology in which approximately 4000 specimens are permanently displayed.

In order that senior students may learn at first hand something of the conditions, problems and satisfactions of rural practice, fourth-year students are encouraged to spend a period of two weeks under a selected rural preceptor. This has proved to be a valuable educational feature of the course.

Four-year postgraduate diploma courses in Surgery and Anæsthesiology are offered. These consist of a series of graded resident appointments at the teaching hospitals, and lectures and seminars especially designed for candidates preparing for the examinations of the Royal College of Surgeons of Canada.

UNIVERSITY OF SASKATCHEWAN

Faculty of Medicine
Saskatoon, Sask.

J. W. MACLEOD, M.D., Dean

THE COLLEGE OF MEDICINE had its origin in the School of Medical Sciences, formed in 1926 to provide the first two years of medical studies. The curriculum was altered in 1945 to conform to the four-year pattern adopted by most Canadian universities. With the laying of the cornerstone of the University Hospital and consolidation of plans for clinical departments, the medical school became the College of Medicine in 1952. Clinical departments were set up two years later with full-time heads in medicine, surgery, obstetrics and gynæcology, psychiatry, pædiatrics, rehabilitation medicine, anæsthesia, ophthalmology, diagnostic radiology and therapeutic radiology. With assistants in several departments the number of full-time teachers in the clinical departments of the College of Medicine and University Hospital in 1956-57 is 24. Working with these are 75 part-time teachers, of whom 18 are general practitioners. Fourth-year instruction is being given for the first time this year, with about 30 students expected to take the conjoint university and Medical Council of Canada examinations in April 1957. The first M.D. degrees will be conferred, therefore, at the regular university convocation on May 10, 1957. A year of internship satisfactory to the College of Physicians and Surgeons of Saskatchewan is required before licensure.

The Medical Building, opened in 1949, has four full floors and a fifth floor containing animal quarters, operating rooms and radioisotope laboratories. Connecting with it on three floors is the University Hospital. Opened in January 1955, this 550-bed hospital is running at 80 to 85% occupancy. Special features include psychiatric and rehabilitation wards on the fifth floor, sharing facilities in therapy; a large cafeteria dining room on the sixth floor with facilities for meal-time committee meetings; a drug-manufacturing unit run as a teaching activity by the College of Pharmacy, and laboratories for pulmonary function studies, cardiac catheterization and research in radiation physics. In the hospital are housed also the Cancer Clinic of the Provincial Department of Public Health, the Canadian Red Cross Society Blood Bank and an outpatient department occupying two floors of one wing. A gift of $250,000 from the Saskatchewan Division of the Canadian Cancer Society was the beginning of a medical research building now under construction. When it opens in 1957-58, one floor will house a cancer research unit supported by the National Cancer Institute of Canada. This will include additional animal quarters, operating rooms, an electronics work-

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shop, facilities for isotope and radiation studies, constant-temperature rooms and a module system of laboratories suitable for biochemistry, tissue culture and other standard research techniques.

The University Hospital does not come under the University, but is administered by a board established by the University Hospital Act. By the latter's terms three representatives of the University are on the Hospital Board, two of whom must always be the President of the University and the Dean of Medicine. The identifying of medical care with educational goals is further assured by the rule whereby the professorial heads of university departments are also the chiefs of the corresponding hospital departments. In line with the goal of the College of Medicine to prepare graduates who will meet the needs of Saskatchewan communities, special attention is being given to the training of family doctors. During the undergraduate period the student is exposed to the best possible examples of the general practice of medicine. This is aided by a rural preceptorship in the final year and by the close collaboration in the clinical departments of full-time teachers, part-time specialists and selected general practitioners. The latter are attached to services in the University Hospital through the Department of General Practice. A specially arranged two-year internship is urged as minimum training for those who desire to become family doctors. Clinical teaching is carried out also at the Saskatoon City Hospital, at St. Paul's Hospital, at the Saskatoon Sanatorium and at Saskatchewan Hospital at North Battleford (psychiatry). Fourth-year students spend a month in a Regina hospital in either obstetrics or pædiatrics.

Entrance to medicine is by the bachelor's degree in arts or science, or the completion of at least two years of university work after Grade XII. Apart from required work in English, a foreign language, physics, chemistry and biology, emphasis is placed on liberal studies along lines of personal interest. This may be illustrated by the following excerpt from the calendar: "Students are reminded that there is no advantage in taking medical subjects such as biochemistry, physiology or bacteriology during their premedical work. Nor will the accumulation of many credits in science subjects give one applicant advantage over another with similar accomplishment in other academic fields, such as humanities or social sciences. Since the branches of medicine are so varied, there is room for a wide variety of talents and backgrounds among those admitted to its study. In any one class it is hoped that there will be some students who have gone deeply into one or more of the following fields: the physical or biological sciences or mathematics; philosophy, psychology, sociology or anthropology; history, literature or languages, either classical or modern."

Forty students are admitted, of whom about 10% may be from outside the province. The latter are selected on the basis of distinctive qualities in background or experience as well as scholarship. The tuition fee for first-year medicine is $425 and for subsequent years $475. Other student fees, including health service, are $43. A limited number of students may live in university dormitories.

Postgraduate study towards M.Sc. or Ph.D. degrees may be carried out in the medical science departments. Advanced work in the clinical fields may be arranged through the heads of the respective departments or the Executive Director of the University Hospital. Residency training is available in most specialties. Extra clinical experience is provided for general practitioners on an individual basis.

UNIVERSITY OF ALBERTA

Faculty of Medicine
Edmonton, Alberta

J. S. THOMPSON, M.D., Executive Secretary

THE FACULTY OF MEDICINE of the University of Alberta is administered as part of the University of Alberta, which is a provincial government institution.

The entrance requirements are two full university years with full university courses in organic and inorganic chemistry, physics and zoology; otherwise students are urged to take courses that are interesting to them whether in the sciences or in the humanities.

Each of the first three years consists of 33 weeks, exclusive of holidays and final examinations. The final year is about 30 weeks. The degree given is Doctor of Medicine.

The schedule of fees is: first year $310; second year $460; third year $510; fourth year $510. Students in all years pay, in addition, $41.25 in general university fees.

The chief teaching hospitals are the University Hospital, the Royal Alexandra Hospital, the Edmonton General Hospital, and the Misericordia Hospital, which are all general hospitals in the city of Edmonton. Use is also made of the facilities of the Oliver Mental Hospital, the Charles Camsell Indian Hospital, and the Aberhart Tuberculosis Sanatorium, all of which are located in Edmonton.

Financial aid for students is somewhat limited. Grants and loans are available through the Students Assistance Act of the Province of Alberta and through a W. K. Kellogg Student Loan Fund as well as through a small loan fund established by the Class of 1941. The College of Physicians and Surgeons of Alberta donates $200

scholarships to the two top-ranking students in each of the first three years, and also provides a $1200 fellowship, which is awarded to a student who takes a year from his medical course to obtain further training in one of the basic sciences. Certain small prizes for proficiency in various subjects are available, as are some scholarships open to the student body of the university as a whole.

There are certain features of the course which might be mentioned. Students in fourth year now live in for three weeks in obstetrics and one week in pædiatrics, although they take their normal clinics and classes during this time. Combined clinics for third-year and fourth-year students are held once each week. One major topic is discussed by several representatives of the basic science and clinical departments, each applying the knowledge of his own field to the subject under discussion.

At present a general revision in the undergraduate curriculum is in progress aimed at increasing the amount of time the student spends in contact with individual patients while maintaining an adequate training in the basic sciences which are so important to the understanding of disease processes in these patients.

Facilities for taking advanced degrees are available in various departments including Anatomy, Biochemistry, Bacteriology, Pathology, Physiology, Medicine and Surgery. Such study is under the jurisdiction of the School of Graduate Studies of the University of Alberta.

The committee of the Faculty of Medicine on Graduate Studies has at present under its direction a large number of doctors at various stages of their training in different specialties. No degree is granted by the University at the end of this program, since it is designed to give the doctor a comprehensive training in his specialty that will enable him to take the certification or fellowship examinations of the Royal College of Physicians and Surgeons of Canada with a reasonable chance of success. Since the program for each candidate is shaped to suit his particular needs, no details of the program can be given here.

Our Committee on Continuation Studies works closely with the College of Physicians and Surgeons of Alberta to provide refresher-type programs for local practitioners. This usually consists of a week-long refresher course given annually at the University as well as visits by travelling teams to centres in Alberta. For the first time this year short courses of two or three days' duration have been instituted in certain fields such as electrocardiography and orthopædic surgery.

UNIVERSITY OF BRITISH COLUMBIA

Faculty of Medicine
Vancouver, British Columbia

JOHN C. PATTERSON, M.D., Dean

THE UNIVERSITY OF British Columbia Faculty of Medicine was established in 1950 and its first class graduated in May 1954.

The physical plant consists of a group of basic medical sciences buildings on the main campus of the University. A number of departmental offices and laboratories of the clinical departments are housed at the Vancouver General Hospital. At the hospital, over 500 beds are assigned for teaching medical students. In addition, the facilities of St. Paul's Hospital, Provincial Mental Hospital (Essondale), the Children's Hospital, and the Western Rehabilitation Centre are used in clinical teaching.

A new Medical School and Pathological Services Building is nearing completion at the Vancouver General Hospital site. This will house the departments of medicine, pathology, and surgery, as well as providing library facilities, administrative offices and students' areas. The library is a biomedical branch library of the University Library on the main campus.

The entrance requirement of the Faculty of Medicine includes three years of premedical studies in an approved Faculty of Arts and Sciences. Minimum course requirements include two years of English, one year of mathematics, three years of chemistry, one year of physics and one year of biology-zoology.

Classes for the first year in medicine are limited to 60 students. There are no restrictions as to residence. No applicant is accepted who has been required to withdraw from another medical school. A personal interview may be requested of any applicant.

The academic year begins on the first Tuesday after Labour Day. Tuition fees in each year of the medical course are $445. Incidental fees are an alma mater fee of $18. No extra tuition fees are charged non-residents, but non-residents of the province must pay a $10 hospitalization fee.

The examinations of the Medical Council of Canada are used as conjoint final examinations in the fourth year. All written and oral examinations are held in late April or early May. Each candidate for the degree of Doctor of Medicine is required to present a thesis acceptable to the Faculty.

Application blanks are available between August 15 and December 15. Accepted applicants must pay a preliminary fee of $100 to be applied on the tuition of the first year of the medical course. Correspondence should be addressed to the Faculty of Medicine, University of British Columbia.

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Case Reports

FATAL HYPOGLYCÆMIC COMA FROM THE USE OF TOLBUTAMIDE (ORINASE)*

J. B. R. McKENDRY, M.D., M.Sc., F.R.C.P.[C.], *Ottawa*

THE FOLLOWING CASE REPORT illustrates a poorly appreciated hazard in the use of oral hypoglycæmic agents in the management of diabetes.

The patient was an 84-year-old man who had been diabetic for more than 15 years. His recent hospitalization resulted from the fact that he had stopped insulin without authorization about one year previously and recently had developed pneumonia with resultant keto-acidosis. On admission the blood sugar was 540 mg. % and carbon dioxide combining power 38.5 vol. %. He responded fairly promptly to the usual measures for treatment of diabetic keto-acidosis and the pneumonia responded satisfactorily to antibiotics. By the end of 10 days he had been well established on a mixture of unmodified insulin 40 units and protamine insulin 20 units each morning. A rather small diet (1200 calories) was prescribed although this patient was undernourished, because his appetite was so poor he would not consume more than this amount of food.

In view of his previous history, it seemed unlikely that this man could be depended upon to continue the use of insulin after leaving hospital and, in any event, the use of insulin was becoming technically too complex in relation to his progressive senile tendencies. On one occasion this had resulted in his administering Benedict's solution to himself in place of insulin. For these reasons it was thought desirable to determine whether he could be controlled with tolbutamide (Orinase).

Accordingly, on the 16th hospital day the insulin dosage was reduced by half and 2 g. of tolbutamide (Orinase)† was given after breakfast. There was a prompt fall in blood sugar which reached 47 mg. % 2½ hours after breakfast but no symptoms developed. Thereafter the dose of Orinase was maintained at 1.5 g. each morning and after the third day insulin was discontinued entirely. About the end of the first week on Orinase the fasting blood sugar was 153 mg. % and the blood sugar 2½ hours after breakfast was 215 mg. %. In an attempt to obtain better control the dose of Orinase was then increased to 2 g. daily and, on the day following, blood sugar levels were 109 mg. before and 122 mg. % at 2½ hours after breakfast. Two days later on the same regimen the values were 128 and 205 and on the following day 171 and 201. On the 28th day blood sugar levels of 116 and 148 were obtained and on the 33rd hospital day he was discharged home to continue taking 1 g. of Orinase twice daily.

Six days later he was admitted to another hospital in a stuporous condition but revived spontaneously over the next 18 hours, so that by the following evening he was able to eat his usual supper and was given his usual dose of 1 g. of Orinase at supper time. A few hours later he lapsed into unconsciousness. The nature of the coma was not understood until the following morning, about 16 hours later, when a blood sugar of 26 mg. % was obtained. In spite of the use of concentrated glucose solution intravenously followed by a continuous intravenous drip of glucose sufficient to maintain moderate glycosuria, he did not regain consciousness. No signs developed to suggest focal cerebral damage. On the fourth day of unconsciousness he roused slightly and made attempts to swallow small amounts of fluid placed in his mouth. By the morning of the fifth day of coma he was noted to have a generalized measles-like eruption and he died about noon on that day. At no time was there any appreciable elevation of temperature, and the eruption was regarded clinically as possibly representing skin sensitivity to Orinase.

Although autopsy studies were not made available, it would appear that death was attributable to the effects of prolonged hypoglycæmia on the central nervous system of an elderly patient who probably had considerable cerebral arteriosclerotic change.

DISCUSSION

The purpose of this report is to draw attention to the fact that the blood-sugar-lowering sulphonylureas can produce dangerous degrees of hypoglycæmia. The risk of this complication has received very little attention in the literature relating to clinical use of carbutamide and tolbutamide. However, the clinical trials in 1942 of the earliest antidiabetic sulphonamide, p-aminobenzene-sulphamido-isopropylthiodiazole (IPTD), were attended by severe hypoglycæmic reactions, some of them fatal. It was found that only prompt and adequate administration of glucose would forestall the consequences of severe hypoglycæmia in these cases. Apparently this complication was a major factor in eliminating IPTD from more extensive clinical use at that time. The complication reported here is particularly disturbing because the dangerous hypoglycæmic reaction occurred after three weeks of fairly satisfactory control of blood sugar by Orinase. In retrospect the hypoglycæmia induced by the initial dose of Orinase in this patient might be regarded as an indication of undue susceptibility to hypoglycæmic agents. Furthermore, he had given a history of one previous hospitalization for severe hypoglycæmia due to insulin. Another factor which might have predisposed to undue risk of prolonged hypoglycæmia was his anorexia and small food intake for several months which had led to a moderate degree of malnutrition.

While severe hypoglycæmia from Orinase does not appear to constitute a major obstacle to its continued clinical use, it does call for exercising unusual care in patients who are malnourished, who have a history of severe reactions from insulin, or who have cerebral arteriosclerotic changes. In any patient receiving a sulphonylurea antidiabetic drug the occurrence of suggestive symptoms or signs, and

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†Orinase was supplied by Hoechst Laboratories of Canada, Ltd., 2435 Lucerne Road, Montreal 16, Quebec.

particularly the occurrence of unconsciousness, should immediately rouse suspicion of severe hypoglycæmia.

SUMMARY

A case of fatal hypoglycæmia from the use of tolbutamide (Orinase) is reported. The terminal episode developed after three weeks of treatment by the drug.

SEXUAL PRECOCITY
Report of an Ovarian Tumour in a Girl of 19 Months

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INSTANCES OF SEXUAL PRECOCITY have attracted the interest of doctors from the early days of medicine. The first record is that of Mandeslo in 1658, who reported a girl whose menstruation had commenced at three years of age and who gave birth to a son when six years old.

The early literature contributes little to the etiology of this condition. In 1941, Weinberger and Grant[1] made an extensive study of such patients in whom there was a cerebral tumour. Russell and Sachs[2] in 1943 studied pineal tumours as a cause of sexual precocity. Novak[3] in 1944 reported cases of constitutional precocity in girls. Seckel[4] in a review of the literature from 1926 to 1944 found only 31 definite instances of granulosa cell tumour causing sexual precocity. Pedowitz, Felmus and Mackles[5] in October 1955, in a review of the literature, found 83 cases of precocious pseudopuberty due to ovarian tumours, to which they added two of their own. Of the total of 85 cases in this survey, 62 were granulosa cell tumours of the ovary. The youngest case to be reported was that of a 14-week-old infant reported by Zemke and Herrell[6] with precocious development due to bilateral tumours of this type.*

The age limit below which sexual development is considered precocious can be selected only on an arbitrary basis. Seckel[7] gives ten years in boys and eight years in girls as the lower limits for normal puberty. Novak[3] regarded puberty as precocious when it occurred under the age of nine years. Jolly[8] sets the tenth birthday as the figure for both sexes.

By true puberty is inferred the ability to reproduce. This of necessity demands a mature endocrine system. Only when the cause is cerebral can true puberty exist. False puberty or the development of the secondary sexual characteristics does not imply that the child has the ability to reproduce. When the cause of precociousness is gonadal or adrenal, the gonads themselves are infantile. This fact may be of importance in arriving at a clinical diagnosis, particularly when the patient is a male.

No matter what the etiology, there is liable to be a marked increase in physical activity. The height and weight are often advanced, as is usually the bone age. As a result of the accelerated skeletal maturation, early closure of the epiphyses occurs, with resultant dwarfing. Dentition and mental development are not affected by the stimulus to precocious sexual maturity.

Constitutional precocity is the commonest form of precocity in girls. In such instances the normal order of events is maintained—breast development followed by pubic hair, then menstruation and finally the appearance of axillary hair. At the other end of the sexual span it would seem that the menopause is delayed although there have been few recorded cases where observation has been carried over the necessary length of time.

Organic lesions of the brain which cause sexual precocity provide a link with the mechanism of normal puberty. Weinberger and Grant[1] believe that a lesion of the posterior hypothalamus removes the inhibitory force normally exercised over the anterior lobe of the pituitary. Once the inhibition is removed, the anterior pituitary then releases gonadotrophic hormones which stimulate either testicle or ovary. It has been suggested that such a lesion might actually stimulate the reproductive mechanism.

Sexual precocity may result from overactivity of the adrenal cortex either by hyperplasia or by tumour, benign or malignant. It is exceedingly rare for adrenal hyperactivity in girls to cause feminization rather than masculinization. Adrenal hyperfunction of the feminizing type is most often due to carcinoma.

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*Since the submission of this paper for publication a report has been noted of a case of precocious puberty showing breast development at the age of one month and growth of pubic hair and vaginal bleeding at five months (Peterman, M. G.: *J. Pediat.*, 49: 719, 1956).

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Fig. 1.—Gross specimen bisected, showing a moderately firm, yellowish cortex dotted with small cystic cavities containing clear fluid.

The majority of ovarian tumours causing sexual precocity are of the granulosa cell type, and even these are very infrequent. Ovarian teratomata and chorionepitheliomata may very rarely cause sexual precocity. The teratoma resembles the granulosa cell tumour in its clinical effects. The chorionepithelioma is very malignant and usually leads to death in 18 months, producing cachexia which is in striking contrast to the sexual overdevelopment.

It is believed that granulosa cell tumours are derived from the ovarian mesenchyme, and some authors refer to them as feminizing mesenchymomas of the ovary. These tumours are often unilateral, smooth, firm and encapsulated; they vary in size from a small nodule to a tumour which may fill the abdomen. The frequency of malignancy has not been accurately defined, but reported from very low to 28% of cases. A recent review of granulosa cell tumours of the ovary in adults from the records of the Royal Victoria Hospital, Montreal, indicates a higher rate of recurrence where follow-up is adequate.

Such tumours, when functional, secrete œstrogens and the clinical features are dependent on this—mainly development of breasts, sexual hair and uterine bleeding. The last is solely a result of periodic variation in œstrogen level. There is of course no ovulation. Abdominal enlargement may be present. Statural excess may be minimal and the bone age normal or slightly advanced. Urinary œstrogen levels are markedly increased while the gonadotrophic assay is low. In constitutional precocity, on the other hand, the urinary œstrogens are within the normal adult range, as are the gonadotropes.

This is a report of sexual precocity in a girl of 19 months, and a description of the ovarian tumour that caused the premature sexual development of our patient.

C.M., the first-born of healthy parents, was first admitted to hospital at the age of 6 months for the repair of a small uncomplicated lumbar meningocœle. At that time no other anomalies were present and her development in all other respects was normal.

She was next seen on March 29, 1955, when she was admitted to the hospital at the age of 20 months because of vaginal bleeding. Nothing unusual had been noted by the parents until February 1955, when she bled from the vagina for four days, an amount described by the mother as equal to her own first menstruation. It was then noted that the breasts were enlarged. Three weeks later there was a five-day period of vaginal bleeding.

She was a bright, healthy looking girl of normal stature and weight with budding development of both breasts, downy hair over the pubes and enlarged external genitalia for her age. Two days after admission vaginal bleeding was noted. X-ray of the skull and abdomen was negative and x-ray of the bones showed normal skeletal age. Tuberculin test was negative. One 24-hour assay for follicle stimulating hormone was negative at 3.3 mouse units; œstrogen was positive at 10 mouse units and negative at 20 mouse units.

On March 31, the child was examined by a gynæcologist (F.J.T.) because of the probability of an ovarian tumour being the cause of precocious development. On rectal-abdominal palpation an impression of a mass in the upper pelvis was obtained, but a full rectum and the lack of relaxation on the part of the child made the findings of questionable accuracy. On April 7, following an enema, the child was re-examined under general anæsthesia. This examination confirmed the presence of an egg-sized mass in the upper left pelvis, while the uterus could be distinctly felt in the mid axis of the pelvic canal. At this time a cytology smear was obtained which showed fully matured squamous cells with 30% true cornification.

After two postponements because of measles and chickenpox, laparotomy was performed on May 2 and the pelvis explored. A uterus slightly enlarged for her age was found in the mid pelvis and showed no abnormalities. The left ovary was replaced by an ovoid slightly flattened tumour measuring 6 x 5 x 3 cm. It had an intact capsule, bluish white and free from adhesion to surrounding structures. The tumour was removed and the pedicle ligated. The right ovary was noted to be small and normal.

A cytology vaginal smear taken immediately before operation showed mature squamous cells with 65% cornification.

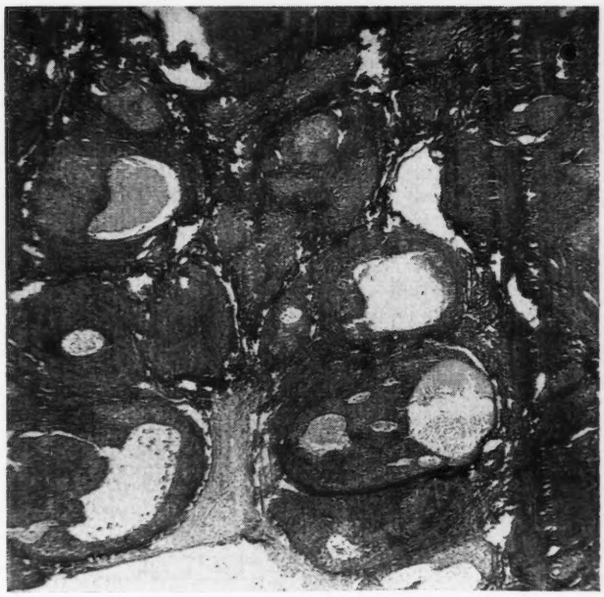

Fig. 2

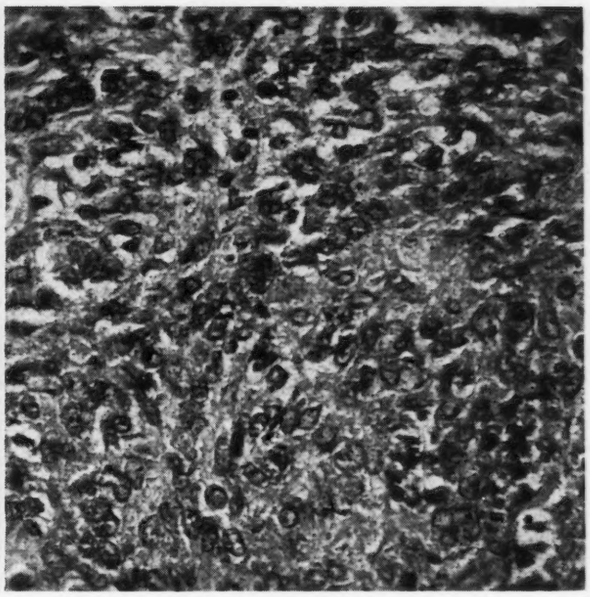

Fig. 3

Fig. 2.—Low-power microscopic view of tumour showing diffuse microcystic structure. The cysts are in the range of size of maturing Graafian follicles and also demonstrate a definite morphological granulosa layer. The surrounding stroma is of thecal cell type which in some areas show luteinization. No ova were seen in any of our numerous sections of this tumour.
Fig. 3.—High-power microscopic view of tumour showing variation of cell types. Some of these cells are of a size and character consistent with granulosa cells; others are much larger and suggest luteinized granulosa or luteinized thecal cells. Only occasional mitoses were seen. Fat stains showed a small amount of lipoid material in fine droplets diffusely distributed throughout the tumour.

On cut section the tumour showed many tiny cystic areas containing clear fluid studding a yellowish firm cortex uniform throughout. The capsule was intact. On histological examination the tumour was found to be composed of both granulosa and theca type cells with luteinization of both elements in many areas. Moderate numbers of mitotic figures were present. This was considered to be a mixed granulosa-theca cell tumour with luteinization. This conclusion was based on the current view that both granulosa cells and theca cells are derivatives of the cortical stroma of the ovary by differentiation. Since both cell types are capable of luteinization, it becomes readily acceptable that a feminizing tumour of the ovary may be composed of a variety of cells of cortical stromal derivation. Other feminizing tumours of this mixed type have been reported.

The postoperative course was uneventful. As expected, she showed a scant bloody discharge for two to three days postoperatively. A vaginal smear taken on the day of discharge to her home (five days after operation) showed a distinct reversion to an immature basal type of cell and only 5% cornification.

The child was rechecked by rectal examination one month postoperatively and the pelvis was clear. A vaginal smear taken at this time showed only a few basal type cells, with no mature cells and no œstrogenic cornification. On February 5, 1956, nine months after operation, the patient appeared perfectly normal in all respects. Further examination in August 1956 showed no abnormalities. Urine assay for follicle stimulating hormone at this time was negative at 3.3 mouse units in 24 hours. Œstrogen was negative at 10 mouse units in 24 hours. In view of the possibility of recurrence of the tumour, a prolonged follow-up is contemplated.

DISCUSSION

Several features in this patient were somewhat difficult to explain, namely the lack of increased statural growth, the normal bone age and the level of œstrogen. The œstrogen level was expected to be higher, perhaps in the order of 40 to 80 mouse units in 24 hours. Few assay reports are available for comparison, and in a child of this age a level of 10 mouse units in 24 hours must be considered as high. Despite the fact that the literature states that the bone age may remain normal, it is difficult to understand why there should be no advance. Perhaps the level of œstrogen is sufficient to stimulate sensitive end-organs such as the genitalia and breasts but inadequate to stimulate bone growth. On the other hand, the short interval of one month between the initial symptom and our examination may explain the lack of advancement of bone age and of statural development.

SUMMARY

A case is reported of mixed granulosa-theca cell tumour of the ovary with luteinization producing sexual precocity in a child of 19 months. The tumour is described and the literature briefly reviewed.

The authors wish to acknowledge the assistance given by Dr. J. P. A. Latour, Royal Victoria Hospital, in the presentation of the pathological aspects of the case.

REFERENCES

1. WEINBERGER, L. M. AND GRANT, F. C.: *Arch. Int. Med.*, 67: 762, 1941.

2. RUSSELL, W. O. AND SACHS, E.: *Arch. Path.*, 35: 869, 1943.
3. NOVAK, E.: *Am. J. Obst. & Gynec.*, 47: 20, 1944.
4. SECKEL, H. P. G., SCOTT, W. W. AND BENDITT, E. P.: *Am. J. Dis. Child.*, 78: 484, 1949.
5. PEDOWITZ, P., FELMUS, L. B. AND MACKLES, A.: *Obst. & Gynec. Surv.*, 10: 633, 1955.
6. ZEMKE, E. E. AND HERRELL, W. E.: *Am. J. Obst. & Gynec.*, 41: 704, 1941.
7. SECKEL, H. P. G.: *M. Clin. North America*, 30: 183, 1946.
8. JOLLY, H.: Sexual precocity, Charles C Thomas, Springfield, Ill., 1955, p. 5.

RENAL HYPERTENSION WITH CEREBRAL ARTERIOLAR NECROSIS*

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THE WORK OF GOLDBLATT,[1] beginning in 1934, stimulated interest in the subject of hypertension of renal origin, and increasing numbers of cases of unilateral renal disease causing hypertension have been reported. In most of the cases, the renal disease was pyelonephritis and not an occlusive condition of the renal artery. Rapidly fatal hypertension was not unusual in these cases, but in most the course of the condition was longer than one year. In some cases early nephrectomy was performed; in a small proportion of these the hypertension was alleviated.

The purpose of this paper is to present and discuss an unusual case of renal hypertension with encephalopathy, in which clinical signs were atypical and in which vascular lesions were found only in the brain.

Clinical history.—A 32-year-old stenographer was admitted to the Montreal Neurological Institute, complaining of severe generalized headache of nine weeks' duration. Eleven weeks prior to admission she had been admitted to another hospital because of chronic lower abdominal pain and menorrhagia; at that time her past history was non-contributory. On physical examination she was found to be normotensive and to have multiple uterine leiomyomata. This latter diagnosis was confirmed at operation and an abdominal hysterectomy and right oophorectomy were carried out. Postoperatively she complained of severe low back and left flank pain, both of which subsided gradually. On the 10th postoperative day, she began to notice mild bilateral occipito-parietal headache which was throbbing and intermittent. Her recovery was also complicated by a brief period of pneumonitis. By the 24th hospital day, although she still complained of headache, she appeared to have recovered from the operation and was discharged. While at home her head pain became severe, generalized and constant and after six weeks she was readmitted to the hospital. At that time her blood pressure was 165/100 mm. Hg. Because the headache increased in severity, and since anorexia, nausea and vomiting supervened during the next nine days, she was transferred to the Montreal Neurological Institute.

Physical examination.—On admission, the patient was a well-developed, dehydrated, and poorly nourished white female who was alert, but in acute distress from pain. The blood pressure was 160/110 mm. Hg, the pulse rate 80, respiration rate 20, and the temperature 99.8° F. A recent midline abdominal incision was healing well. On examination of the left side of the abdomen, slight resistance to palpation was encountered; otherwise examination of the thorax and abdomen, as well as neurological examination, was unremarkable.

Laboratory findings.—A complete blood count was interpreted as normal. On admission, urinalysis was reported as follows: specific gravity 1.012, albumin 3 plus, sugar 3 plus, acetone 2 plus, with occasional white blood cells and fatty casts. Six days later, urinalysis revealed: specific gravity 1.014, albumin 4 plus, sugar 4 plus, acetone 0, with scattered white cells and fatty casts. Lumbar puncture yielded clear, colourless cerebrospinal fluid under an initial pressure of 90 mm. water (patient lying on her side). The spinal fluid protein was 39 mg. %; the cell count was one mononuclear cell per c.mm. A second lumbar puncture for pneumoencephalogram, done three days after the first, showed an initial pressure of 415 mm. water (135 mm. below vertex) with a final pressure of 310 mm. water (patient sitting). Protein was 31 mg. %. The serum non-protein nitrogen level was 17.2 mg. % (normal 15-30 mg. %). Random blood sugar estimations on two occasions gave values of 176 mg. % and 130 mg. %.

Course.—On the evening of admission, the patient complained of a sudden sensation of dizziness. A few seconds later, she fell to the right as her eyes deviated sharply to the left. A major generalized convulsion ensued, which left her unconscious for 30 minutes. Although she was given sodium phenobarbital parenterally, she had a second seizure a few hours later. Following administration of intravenous fluids, Dilantin, and more phenobarbital, she became seizure-free and during the next day began to eat for the first time in four days.

An electroencephalogram, done the day after admission, suggested a deep-seated lesion in the right cerebral hemisphere, as well as some diffuse cerebral disturbance. For this reason, although plain skull films were negative, a lumbar pneumoencephalogram was performed, but this procedure revealed no abnormalities. She tolerated the air injection well and seemed to be improving, though her headaches remained unchanged, and her level of consciousness was noticed to fluctuate. On the seventh hospital day, the patient had two more seizures similar to the first two. Following the second attack, she became semi-comatose and on physical examination at that time an abdominal mass was found in the left lumbar region. The blood pressure, which had previously fluctuated between 210/130 and 130/90, was 190/120. The serum non-protein nitrogen was again determined and found to be 31.7 mg. %. A radiograph revealed a large soft-tissue mass in the left side of the abdomen. Later that day a retrograde pyelogram showed slight right hydronephrosis and an obstruction of the left ureter a few cm. from the ureteral orifice. That evening the patient had another convulsion, which was followed a few hours later by gradually deepening coma, fixed pupils, rising blood pressure, and a full pulse. Shortly thereafter the patient died.

Pathological findings (autopsy 8 hours post mortem).—The heart weighed 250 g., the chambers were not dilated, and the myocardium was normal grossly and

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microscopically. Numerous small flame-shaped subendocardial hæmorrhages were present on the left side of the interventricular septum, just inferior to the aortic valve. Histologically these consisted of intact red blood cells with no surrounding reaction. The coronary arteries, aorta, pulmonary vessels, trachea and bronchi, and thoracic lymph nodes were unremarkable. The right lung weighed 225 g., the left 195 g., and both were crepitant throughout. Microscopically there was minimal pulmonary congestion with small focal areas of œdema, but no inflammatory reaction was seen.

The peritoneal cavity contained many coarse and fine fibrous adhesions, particularly in the left side of the pelvis. The liver, spleen, pancreas, gall-bladder, thyroid and adrenals were grossly and histologically within normal limits. The right kidney weighed 170 g.; its capsule stripped easily to reveal a slightly congested surface. On section, the cortex was of normal thickness and well demarcated from congested pyramids. There was minimal right hydronephrosis, although the ureter was patent throughout. Microscopically the right kidney was moderately congested, the tubules containing occasional hyaline casts, and there was minimal arteriolosclerosis and atherosclerosis. No necrotizing lesions of arterioles were present. The left kidney was stretched over a markedly dilated left renal pelvis which had flattened the renal papillæ and markedly thinned the pale parenchyma. The hydronephrotic sac measured 13 cm. in diameter, and with the left ureter and perinephric fat weighed 260 g. The lower pole of the spleen was adherent to the hydronephrotic kidney, and there was minimal fibrosis of the periadrenal fat on the left. The sac was tense with clear fluid, and thick fibrous trabeculæ containing variably obliterated vessels were seen traversing its inner wall. The left ureter was tortuous and dilated, narrowing to a point 2 cm. from the bladder, where the lumen was occluded and the epithelium was replaced by fibrous tissue. In and about the wall of the ureter, in the region of the occlusion, surgical suture material was identified. Similar material was also present in the pelvic areolar tissue and beneath the peritoneum. In areas adjacent to suture material there was considerable fibrosis, with foreign-body giant cell reaction, and in some places thrombosed vessels were seen. Microscopically, in addition to the changes of hydronephrosis the left kidney was the site of a subacute and chronic pyelonephritis, apparently of fairly recent origin, as only very occasional glomeruli were hyalinized. There were minimal glomerular basement membrane thickening and minimal arteriosclerosis; no arteriolar lesions were identified. Phosphotungstic acid staining of both kidneys showed no necrotizing arteriolar lesions. There was a mild acute cystitis and moderate diverticulosis of the descending and sigmoid colon. The bone marrow and pituitary were unremarkable.

The brain was pale and firm and weighed 1440 g. There was general flattening of gyri and sulci, particularly over the parietal lobes. A cerebellar pressure cone was not present, but there was slight uncal herniation. Sections taken from the frontal and parietal cortex and from the basal ganglia, cerebellum, pons and medulla showed generalized œdema, as evidenced by the large perivascular and pericellular spaces, and acute swelling of oligodendroglia. The most conspicuous lesion was a fibrinoid necrosis of short segments of some of the cerebral arterioles, the necrotic material in these areas staining positively with phosphotungstic acid-hæmatoxylin stains (Figs. 1 and 2). In association with some of the necrotic arteriolar lesions there were perivascular collections of polymorphonuclear leukocytes, small recent perivascular hæmorrhages, and a focal perivascular increase in œdema. These additional lesions occurred either singly or in various combinations. The lesions were randomly distributed, but were most frequently seen in sections from the cerebral cortex. The meningeal arterioles appeared normal.

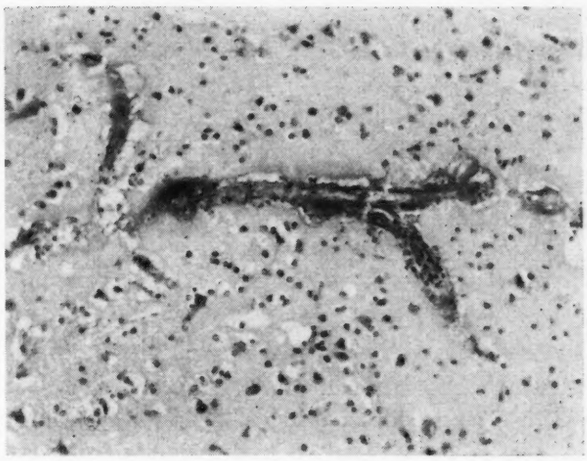

Fig. 1.—Arteriole in cerebral cortex showing segments of necrotic wall, with surrounding œdema, and slight polymorphonuclear infiltration. Hæmatoxylin-phloxine-saffron stain.

In summary, the patient was a young woman with an occluded left ureter, marked left hydronephrosis, hydroureter, and left pyelonephritis. The heart was not hypertrophied and the only vascular lesion discovered was a fibrinoid necrosis of cerebral arterioles, occurring with marked cerebral œdema.

DISCUSSION

The unusual features of this case were its rapid course, the presence of cerebral œdema without clinically elevated cerebrospinal fluid pressure or papillœdema, and the presence of necrotizing vascular lesions in the brain alone. An attempt will be made to explain the findings in the light of experimental and clinical data related to hypertension.

Our patient's blood pressure was well documented, with normal levels observed

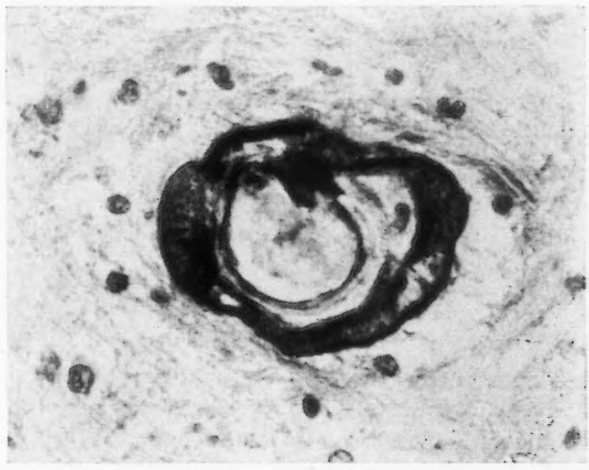

Fig. 2.—Brain stem arteriole showing fibrinoid change in wall, which stains positively with phosphotungstic acid hæmatoxylin.

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before the hysterectomy. A sustained, moderate hypertension was recorded shortly after the onset of severe headache about two months postoperatively. In the presence of definite hypertension, the lack of cardiac hypertrophy and the minimal nature of the arteriosclerosis found are not surprising, considering the short duration of the hypertensive condition.

Hypertension in our case appears to be related to the unilateral renal disease present, since hypertension developed soon after ureteral obstruction occurred, since no other possible cause for the hypertension was found, and since the unilateral renal disease present was of a kind known to be frequently related etiologically to hypertension. The vessels of the left kidney were stretched over the surface of the large hydronephrotic sac which had formed, and the renal parenchyma was the site of a typical subacute and chronic pyelonephritis. There was no evidence of long-standing inflammatory or vascular disease in the left kidney except for minimal atherosclerosis. Either the extrarenal stretching of vessels or the intrarenal fibrotic changes present can be offered to explain the alteration of renal blood flow, which, according to Braasch,[2] is necessary for the production of renal hypertension. Pyelonephritis is the commonest unilateral renal disease causing hypertension and it may occur alone, or in combination with hydronephrosis, as in our case.[2] Hinman[3] has shown that hydronephrosis invariably follows ureteral ligation, and clinical evidence indicates that unilateral hydronephrosis alone occasionally causes hypertension,[4, 5] although the experimental evidence for this is meagre.[6, 7]

The proteinuria and glycosuria observed clinically are difficult to explain. Random blood sugar estimations were normal, and so a lowered renal sugar threshold must have been present. Non-protein nitrogen levels were normal, but urine specific gravity was low on two occasions, although urine-concentrating ability was not tested. Aside from some congestion and minimal degrees of atherosclerosis and arteriolosclerosis, the right kidney was histologically unremarkable. The abnormal urinary findings may have been due to a functional change in the right kidney, preceding actual microscopic lesions and related to the patient's hypertension.

The only significant vascular lesions present were found on microscopic examination of the brain and consisted of a spotty necrotizing arteriolitis, most prominent in the cerebral hemispheres. The lesions appeared to be morphologically identical with the vascular lesions seen in various organs in malignant hypertension,[8] with those described in a case of cerebral eclampsia by Vortel,[9] and with those produced in hypertensive encephalopathy in rats by Byrom.[10] Fibrinoid has been described in many conditions, particularly in the collagen diseases and in malignant hypertension.[11] The fact that the fibrinoid necrosis was confined to the walls of the cerebral arterioles in our case, together with the clinical picture, and the absence of fibrinoid or other significant lesions in organs other than the brain at autopsy, all point to the hypertension that was present as the causative factor. The etiology of these lesions has been illuminated by experiments in which typical vascular lesions of malignant hypertension have been produced by the mechanical distension of vessels, in the absence of uræmia or arteriosclerosis.[12] In the rat with experimental hypertensive encephalopathy, Byrom[10] has demonstrated a progression of cerebral arteriolar changes, from a diffuse increase in arteriolar tonus to focal spasm and œdema, and finally to focal arteriolar necrosis with infarcts and hæmorrhages. It is interesting that in our case, in addition to the vascular lesions, there was histological evidence of focal increase in œdema around damaged arterioles, perhaps similar to the focal œdema Byrom found in his experiments. The predominance of arteriolar lesions in the cerebral hemispheres in our case also corresponds with Byrom's findings. We feel that many of Byrom's observations apply to this case, and that its presentation lends support to his suggestion that spasm with focal functional change (œdema?) may account for many of the reversible symptoms seen in hypertensive encephalopathy.

The symptoms of headache, nausea and vomiting, convulsions, and altering level of consciousness were typical of cerebral œdema. The confusing absence of elevated CSF pressure and papillœdema, although unusual, has been recorded in cerebral œdema, particularly when due to malignant hypertension.[13]

It is difficult to explain why arteriolar lesions, a consequence of the patient's hypertension, should be present only in the brain. Certain facts appear to be relevant. Diffuse cerebral

œdema as a form of encephalopathy occurs more often in young than in older hypertensives.[14] Rapid, as opposed to slow, development of hypertension (which occurs in experimental conditions, and which appears to have occurred in our case) or the sudden increase in a previously moderate or marked hypertension[15] predisposes to the development of encephalopathy. Fleming[16] notes that the arterioles of the bowel and brain tend to develop lesions in response to hypertension earlier than do the arterioles of other organs. In time, in our case, arteriolar lesions would probably have appeared in other organs if the hypertension had continued. The organ distribution of necrotizing arteriolitis in clinical and experimental malignant hypertension varies considerably, and it is certainly possible that the localization of lesions in the brain in our case merely represents an unusual individual cerebral arteriolar sensitivity to hypertension. In support of this Byrom notes that while some of his rats developed encephalopathy rapidly after induction of hypertension, others sustained severe hypertension for months without signs of cerebral dysfunction.

The presence of left ventricular subendocardial hæmorrhages appears to be related to certain types of intracranial disease, particularly cerebral œdema.[17]

As far as we know, no similar case has been reported in the literature, although a case of granulomatous and necrotizing arteritis in an elderly hypertensive has been the subject of a published clinicopathological conference.[18]

The clinical picture prior to death was characteristic of cerebral œdema, and this, combined with the autopsy findings, indicated cerebral œdema as the immediate cause of death.

The possibility of ureteral obstruction due either to ligation or to postoperative fibrosis exists with nearly every lower abdominal operation. The presentation of this case indicates that such a complication, while usually resulting in simple hydronephrotic atrophy of the kidney, may cause rapidly fatal hypertension. Early diagnosis in the latter condition is extremely important. The experimental work of Floyer[19] and of Byrom,[10] and the frequently excellent response of blood pressure elevated because of hydronephrosis following nephrectomy, indicate that, in the absence of significant right renal arteriolar lesions, the hypertension in our case might have been reversed completely if left nephrectomy could have been performed.

SUMMARY

Following hysterectomy, a 32-year-old woman developed left loin pain, hypertension, headache, nausea and vomiting, and convulsions with normal CSF pressure and died as a result of cerebral œdema three months postoperatively. Autopsy revealed a fibrous occlusion of the lower end of the left ureter, with marked hydronephrosis, and subacute and chronic pyelonephritis of the left kidney. The right kidney was essentially normal. The cerebral œdema was associated with a spotty fibrinoid necrosis of cerebral arterioles, and vascular lesions were not found in any other organ.

The authors support a view that the left renal disease caused the hypertension, which in turn produced the cerebral arteriolitis. An attempt is made to explain the unusual localization of arteriolar lesions in the brain alone on the basis of the patient's age and on the rapidity of onset of her hypertension; the possibility of individual sensitivity of cerebral vessels to increased intraluminal pressure is suggested. Parallels are drawn between the case presented and the recent experimental work of Byrom.

Dr. Lloyd-Smith's permission to use the clinical chart for this case report is acknowledged.

REFERENCES

1. GOLDBLATT, H. *et al.*: *J. Exper. Med.*, **59**: 347, 1934.
2. BRAASCH, W. F.: *Canad. M. A. J.*, **46**: 9, 1942.
3. HINMAN, F.: *Surg., Gynec. & Obst.*, **58**: 356, 1934.
4. GASUL, B. M., GLASSER, J. M. AND GROSSMAN, A.: *J. A. M. A.*, **139**: 305, 1949.
5. ADAMS, L. J.: *Canad. M. A. J.*, **73**: 800, 1955.
6. GOLDBLATT, H., KAHN, J. R. AND LEWIS, H. A.: *Arch. Surg.*, **43**: 327, 1941.
7. WILLIAMS, J. R., JR., WEGRIA, R. AND HARRISON, T. R.: *Arch. Int. Med.*, **62**: 805, 1938.
8. HEPTINSTALL, R. H.: *J. Path. & Bact.*, **65**: 423, 1953.
9. VORTEL, V.: *Schweiz. Arch. Neurol. u. Psychiat.*, **67**: 174, 1951.
10. BYROM, F. B.: *Lancet*, **2**: 201, 1954.
11. ALTSCHULER, C. H. AND ANGEVINE, D. M.: *Am. J. Path.*, **25**: 1061, 1949.
12. BYROM, F. B. AND DODSON, L. F.: *J. Path. & Bact.*, **60**: 357, 1948.
13. ROSENBERG, E. F.: *Arch. Int. Med.*, **65**: 545, 1940.
14. MCALPINE, D.: *Quart. J. Med.*, **2**: 463, 1933.
15. OPPENHEIMER, B. S. AND FISHBERG, A. M.: *Arch. Int. Med.*, **41**: 264, 1928.
16. FLEMING, H. A.: *J. Path. & Bact.*, **65**: 441, 1953.
17. SMITH, R. P. AND TOMLINSON, B. E.: *Ibid.*, **68**: 327, 1954.
18. Case Records of the Massachusetts General Hospital Weekly Clinico-pathological Exercises, Case 41152: *New England J. Med.*, **252**: 634, 1955.
19. FLOYER, M. A.: The role of the kidney in the mechanism of experimental hypertension, *In*: Ciba Foundation Symposium on hypertension; humoral and neurogenic factors, edited by G. E. W. Wolstenholme and M. P. Cameron, J. & A. Churchill, Ltd., London, 1954, p. 155.

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WHAT'S TO BECOME OF THEM?

As this Educational Number goes to press, thousands of young Canadian men and women are polishing the benches of the lecture rooms and laboratories of medical schools across Canada, as they sweat their way through the long and tedious medical curriculum. What are they doing it for? What do they think about their future? Or are they so absorbed in accomplishing their daily or weekly norm that they have little time left for reflection about their future career? In this connection, it seems to us that one major question is whether they will elect to be general practitioners or specialists. If an insufficient number of medical students graduating each year elect to become general practitioners, then the race of family doctors will become gradually extinct, as some experts are predicting. If the supply is maintained, but the majority of those entering the general service of the family are unwilling conscripts, then the quality of general practice may well fall, and all the colleges of general practice, royal or otherwise, will scarcely be able to maintain the standards they aim at.

Are there any pointers to aid our predictions about this important subject? At the recent scientific convention of the College of General Practice of Canada, Dr. Jack DeTar, President of the American Academy of General Practice, said that he thought the trend towards preference for specialism among medical students had been reversed in recent years in the United States. No doubt he had excellent reasons for saying this, but there are some disturbing facts and figures pointing the other way. Five years ago, Weiskotten and Altenderfer (*J. M. Educ.*, 27: 3, 1952) indicated an increasing trend towards specialization among medical graduates. They showed that whereas only 41% of graduates of American medical colleges in 1951 were practising a specialty 10 years after graduation, no less than 74% of the graduates of 1945 were specializing. A survey in *Medical Economics* in 1954 suggested that 60% of senior medical students intended to enter specialty practice. What is more, there are indications that those who originally enter a medical school with the idea of becoming general practitioners change their mind during their curriculum. Thus a Boston study conducted by the Massachusetts Academy of General Practice showed that 44% of first-year medical students intended to enter general practice and only 8% had already opted for specialism, whereas by the fourth year only 25% still maintained a desire for general practice and 59% had decided to specialize. Among interns and residents, the percentage of embryo specialists was even greater—81%.

A very interesting study has recently been published from the University of Buffalo School of Medicine (Monk and Terris, *New England J. Med.*, 255: 1135, 1956) based on questionnaires and interviews dealing with fourth-year students and their preferences. Their studies support the general finding that a majority of fourth-year students intend to specialize. Out of the five classes, 1951-55, interrogated only 34% chose general practice as against 53% choosing a specialty. Monk and Terris tried to find out what types of students fell into these two groups. One significant finding was that senior students with a high class standing rarely intended to enter general practice, whereas approximately half of those in the low scholastic group did. This is of course only a survey of preferences; when the situation comes to be analyzed some years hence for these students, it may well be found that many have changed their minds and that the factor of class standing does not influence the picture to anything like this extent. It is noted, for example, that when general practitioners and specialists who had graduated in 1930-34 were studied, the scholastic background of the two groups proved to be similar. However, it does suggest that to the senior student of relatively high academic attainment, general practice is not an attractive proposition.

Another significant finding was that age of graduation affected choice. The student who was

to graduate at the age of 25 found general practice relatively unattractive, whereas the man who was graduating at age 28 or over opted for general practice in almost half the series studied. No doubt he was feeling more keenly the need to earn his living soon, and the need to get out of the academic atmosphere into the practical workaday world. Maybe of course he had got his values better sorted out, and could see the challenges and attractions of general practice more clearly. Curiously enough, the fact that a young man came from a medical family or from a small town or village did not affect his choice.

Why did senior students want to become general practitioners? The main attractions seem to be the variety of general practice, human interest obtained in being a family doctor, the interest in small town life, and the desire to get down soon to a job of work. Few were concerned with the need for general practitioners in the country. Those who wanted to be specialists stressed the inability to cover all fields of medicine well. Some might say that they were afraid of the challenge presented and the difficulties inherent in the general practice way of life. Others were aware of the deficiencies in status and privileges of the general practitioner and of the better conditions of work and higher incomes of the specialist. Although Dr. DeTar in the address referred to above mentioned the growing congestion in specialties in the United States, particularly general surgery, and the relatively good opportunities for a general practitioner, few of these young men seem to have been aware of this in their choice.

But these figures are perhaps not so depressing as they might at first sight seem. It is very important to realize that many of the students who wish to be specialists wish to specialize in internal medicine. The latter specialty was by far the most popular of all chosen. When it is remembered that apart from big cities the internist is really a "general physician" and a strong link with the adult members of the family he serves, a deficit in recruits to general practice is not nearly so serious as it might appear. It may be that, as the authors of the article suggest, "In the future such general or family physicians will tend to be more limited in scope of practice and more highly trained than the classic general practitioner." Time will show whether indeed the current trend is not towards the destruction of the general physician, but towards his transformation.

AN INVITATION TO ALL C.M.A. MEMBERS FROM THE CHAIRMAN OF COUNCIL, BRITISH MEDICAL ASSOCIATION

We are most grateful to the Editor for giving us the opportunity of telling you of the arrangements being made for the Joint Annual Meeting of the Canadian and British Medical Associations to be held in Edinburgh from July 18 to 24, 1959, and of inviting you to join us.

This will be the 92nd Annual Meeting of the Canadian Medical Association, and the 127th Annual Meeting of the British Medical Association, which has met on four previous occasions in Edinburgh. There have been four previous Joint Meetings, but this will be the first occasion on which a Joint Meeting of our two Associations has been held in the United Kingdom.

Already plans are taking shape for a meeting which should prove of exceptional interest in all branches of medical science. Outstanding members of our profession from both sides of the Atlantic will take part, in plenary and general sessions, round table conferences, and meetings of scientific sections. There will also be a Scientific Exhibition of the widest interest, to which you are invited to submit exhibits. Blending with the scientific activities will be a series of varied and attractive social events.

This Joint Meeting will be our opportunity to try to provide the counterpart of the happy and remarkably successful Toronto Meeting in 1955. Many of us have the most vivid memories of the generous Canadian hospitality, the superlative standards of that occasion and above all the warm friendship of the medical profession in Canada.

July 1959 will soon be with us, and we wish you to know that we look forward to welcoming you and your families to the ancient city of Edinburgh, the capital of Scotland, with which so many of you have ancestral ties. As hotel accommodation in Edinburgh may possibly be a little limited, we are proposing to provide for those who wish it private hospitality in the homes of Scottish colleagues.

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Some of our leading specialist societies are organizing special meetings near to the dates of the Edinburgh meeting. Many of you may wish to visit places of scientific or cultural interest in the United Kingdom either before or after the week in Edinburgh. We hope to be given the opportunity of assisting you in your plans.

The important thing *now* is for you, having noted the dates, July 18 to 24, 1959, and the place, Edinburgh, to decide to attend this meeting and to make your travel reservations and let us know your requirements either for private hospitality or hotel accommodation as soon as possible. All enquiries should be made in the first place through the official travel agency, through which the headquarters of the C.M.A. will be advised of your plans.

In the British Medical Association we all send you our greetings for this year and next year. We look forward to 1959 when we will be able to convey our greetings to you personally.

Yours sincerely,

S. WAND,
Chairman of Council,
British Medical Association.

B.M.A. House,
Tavistock Square,
London, W.C.1.

IT'S SOMETIMES TOO LATE . . .

It is generally admitted that the incidence of Scottish relatives of Canadian citizens is relatively high. It is also generally admitted that Edinburgh is one of the most beautiful cities in the world. Here are two very good reasons why a large number of Canadian physicians and their families will want to visit the conjoint Annual Meeting of the Canadian Medical Association and the British Medical Association in Edinburgh in July 1959. The third good reason is that this is going to be a really outstanding convention. Our British colleagues are sparing no pains to arrange a remarkable program, covering all branches of medicine, both general and special. It is fairly safe to say that the memory of the social events at this convention will not easily be obliterated. The years of experience which Edinburgh has had in handling an international festival have made the city proficient in handling large bodies of tourists. Nevertheless, Edinburgh is a comparatively small city; it is less than half the size of Montreal or Toronto, for example. The housing of large numbers of visitors always presents a problem therefore. Furthermore the immense volume of transatlantic travel nowadays means that space on planes and ships is at a premium.

It may seem absurd to start making arrangements for a trip to Europe which will not take place for over two years, but we are assured by those who know the conditions that we ought seriously to be thinking about making firm reservations for the 1959 convention. On page 590 of this issue you will find a form relating to travel to Edinburgh; this form contains material on any type of tour which you may conceivably wish to combine with your Scottish visit. We suggest that if you have got so far as to think seriously of going to Edinburgh, you should without delay fill in this form and send it to our official travel agency, University Tours, 2 College Street, Toronto 2, and thus be relieved of any worries about your journey. Even though you have a local agent, you must communicate with University Tours direct, who can then make joint arrangements with your local firm.

Editorial Comments

ATARACTIC DRUGS IN THE PSYCHIATRIC HOSPITAL

The production of ataraxia or peace of mind by the group of tranquillizing agents has become a central problem in psychiatry and in the related fields of general practice. During the last few years intense research work has been done throughout the world and many points have been clarified.

The drugs in this group have changed many aspects of psychiatry and particularly those of the mental hospital. Their widespread use has led to criticism of some therapeutic methods in use as a matter of routine for many years, and some of the latter have been omitted or their use restricted to a large extent (insulin shock therapy, electroconvulsive therapy). Even the prognosis in some mental conditions has changed considerably, and the general outlook in psychiatry has become much more cheerful than it used to be.

However, the reports on therapeutic effects of the ataractic drugs concerning small groups of patients as well as mass experiments in psychiatric centres are still highly controversial. In order to show the discrepancy between reports, it is worth while comparing the papers read at

a meeting of the Royal Medico-Psychological Association in February 1956 by Sargant (*Brit. M. J.*, April 28, 1956) with the report read by Bowes of the Department of Psychiatry, McGill University and Ste. Anne de Bellevue Hospital, Quebec, at the 112th annual meeting of the American Psychiatric Association in May 1956 (*Am. J. Psychiat.*, December 1956). Sargant compares the aspects of patients in mental hospitals heavily sedated by the new tranquillizing agents, sitting on benches with their drooping heads and salivating mouths, with those sedated with overdoses of bromide in an era not yet forgotten by older psychiatrists. Nonetheless, Sargant does not seem pessimistic regarding the tranquillizers, but suggests that serious consideration be given to finding exact indications for the use of these agents without neglecting other therapeutic resources which may be quite helpful when properly used. On the other hand, Bowes's report on the present position of chlorpromazine, azacyclonol (Frenquel), mepazine (Pacatal) and reserpine is strictly optimistic.

Bowes and his associates learned from the use of chlorpromazine that this drug would tranquillize without stupefying. It is quite effective in aborting manic attacks and controlling excitement, aggression, destructiveness and restlessness of chronic schizophrenics. In combination with ACTH it helped in reducing the number of shocks and confusion and facilitated psychotherapy and shortened the duration of hospitalization. In elderly patients reserpine proved of greater value because it caused less orthostatic hypotension, confusion and pyrexia. Because of the good results obtained with these drugs, insulin coma therapy has been discontinued. Parkinsonian symptoms due to ataractic drugs have been controlled by Cogentin (benztropine methane sulfonate). The results obtained with Frenquel, a non-toxic isomer of pipradol (Meratran) have also been encouraging; chronic disturbed schizophrenics became more sociable and manageable, and stopped responding to their hallucinations or even stopped having them. Another ataractic drug investigated by Bowes is Pacatal. This drug has been shown to possess a wide margin of safety when administered in small doses. Pacatal proved to be highly effective in controlling insomnia, restlessness and aggression; in some respects it seems to be superior to chlorpromazine, particularly because it does not "flatten" the patient, who remains ambulatory but tranquil. It is interesting to note that Pacatal has been given in equal dosage with chlorpromazine, and that its use has been favoured for pyknic patients while chlorpromazine has been allotted to patients of an asthenic habitus.

Summarizing his impressions, Bowes states that for the first time discharges from the hospital have outweighed admissions. The atmosphere in the hospital is calmer and more optimistic, and use of seclusion and ECT have decreased considerably. However, these "wonder drugs" have not enabled psychiatrists to discharge any deteriorated schizophrenics. On the other hand, the optimistic outlook provided by these drugs has an encouraging influence upon the medical and nursing staff of mental hospitals, giving them an impulse to attack the problem of the "forgotten patient", the long-standing mentally ill who will finally benefit, at least to some extent, by the attention they are receiving.

Discussing Bowes's report, Patton of Ste. Anne de Bellevue, Quebec, felt that the ataractic drugs constitute a new method of control of the disturbed patient, thus creating a feeling of security for both patient and staff. The drugs also made the patient more amenable to the therapeutic milieu. Pollack of Rochester, N.Y., warned that the therapeutic success in using ataractic drugs should be attributed not only to these but also to many other factors "such as total push programs, psychotherapy, etc."

M. TYNDEL

NEW APPOINTMENTS TO JOURNAL STAFF

Two newcomers have recently been welcomed to the staff of the *Canadian Medical Association Journal*. The first, Dr. Maurice R. Dufresne of Montreal, has come to Toronto to take up the post of Assistant Editor. He is a McGill graduate and is bilingual; for several years he has prepared the French summaries of original articles for this journal. Dr. Dufresne was a Clinical Research Fellow (Hæmatology) at the Royal Victoria Hospital and a Teaching Fellow on the attending staff of the Maisonneuve Hospital, Montreal.

The second is our new Advertising Manager, Mr. Donald A. Macaulay, who replaces Mrs. Lyn Bortolin (née Moyse), who left us on the occasion of her marriage. Mr. Macaulay brings to the *Journal* an extensive knowledge of advertising. He was formerly with the Spitzer and Mills advertising agency, and subsequently with Messrs. Vickers and Benson.

Our two new colleagues are already proving their worth in the *Journal* team.

CHANGE OF ADDRESS

Subscribers should notify the Canadian Medical Association of their change of address *two* months before the date on which it becomes effective, in order that they may receive the Journal without interruption. The coupon on page 81 is for your convenience.

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Medical News in brief

ANXIETY STATES

"Physicians as a whole must bring up to date their knowledge of anxiety states and their ability to ascertain and diagnose them and then to handle and treat the many thousands of essentially normal people who are worried, anxious, and depressed. These patients want no pills from their doctor, but instead an honest attempt on the doctor's part to help them do the best they can, to help them learn some way of living with, and even enjoying the tensions of modern living. Finally, the modern medical philosophy must continue to be that basically man is better off having to fare for himself—that being too well cared for, having too little fear from cradle to crypt is not healthy and that all drugs are still only a small and essential part of medical practice, certainly no cure-all for modern trouble to be dispensed indiscriminately without sound medical advice."—*J.A.M.A.*, 163: 426, 1957.

TROUBLE IN FRANCE

A battle royal is currently taking place in France between the medical profession and the government over the latter's new social security proposals. Some form of social insurance has been available in France for nearly 30 years, and the present system, which is due for modification, embodies an indemnity or reimbursement system for medical consultation and drugs. Fees paid to physicians by the government are so low that in practice patients are usually reimbursed for only about 50%-60% of their total outlay, unless they go to hospital, which most Frenchmen do not like to do. The proposed change in the law, known as the Gazier Plan, fixes a scale of fees for 85% of the medical profession and will compel them to adhere to these; the other 15% of the profession would be regarded as consultants and would be free to charge what fee they wish, the patient being merely reimbursed for the cost of his drugs. The medical profession finds grave objections to these plans. In the first place, men in the first category will be obliged to see many more patients in order to make a living, and this will lead to assembly line medicine. In the second place, it will be extremely difficult to decide who should be consultants in the favoured 15% and who should not. The whole plan has not been finalized yet, and there is some talk of tying it to the cost of living. In the meanwhile, there is much trouble brewing.

PHENOBARBITAL AND RESERPINE IN HYPERTENSION

Because reserpine is known to have a sedative or tranquillizing effect, it has been suggested that its hypotensive effect is due to sedation. Cooper and Cranston (*Lancet*, 1: 396, 1957) made a small control trial on 11 patients with essential hypertension to compare the effects of reserpine and phenobarbital on blood pressure. They noted that a considerable time elapsed after administration of reserpine before it affected blood pressure; this amounted to four or five weeks. They therefore compared readings only after the first six weeks of each trial period. Results showed clearly that phenobarbital in a dose of ½ gr. three times a day had little or no beneficial effect on blood pressure, whereas reserpine 0.5 mg. three times a day invariably, and usually significantly, lowered blood pressure. In all of seven cases, reserpine lowered the diastolic pressure and in five cases it produced a significant fall in systolic pressure as well.

ANTIBIOTIC COMBINATION

There is currently considerable interest in the use of multiple antibacterial agents, in the hope that these will exercise a synergistic action and help to cope with the increasing numbers of antibiotic-resistant infections, notably staphylococcal infection in hospital.

The question of synergism in such combinations is still unsettled. A recent paper by Jones and Finland (*New England J. Med.*, 256: 115, 1957) relates to *in vitro* studies of blood of normal subjects after ingestion of penicillin or oleandomycin or combinations of these agents. These studies failed to show enhanced activity of the combinations over and above that attributable to each of the components. Controlled studies of antistreptococcal and antistaphylococcal activity of plasma were carried out, and penicillin always produced the highest values and greatest total activity in the blood against penicillin-sensitive strains. Oleandomycin, on the other hand, was least active and its activity was much inferior to that of erythromycin against staphylococci and streptococci. Combinations of penicillin with oleandomycin always gave intermediate values.

LONG-TERM PROGNOSIS IN TOXÆMIA OF LATE PREGNANCY

At the Royal Maternity Hospital, Belfast, Northern Ireland, there were 1420 pregnancies associated with toxæmia during 1946-50. A follow-up of 1358 of these cases has now been completed, and in an article in the *Journal of Obstetrics and Gynæcology of the British Empire* (63: 833, 1956) Gibson discusses the findings. Only one patient who had been known to suffer from pre-eclamptic toxæmia subsequently died of hypertension in this period. No evidence was found that pre-eclamptic toxæmia predisposed to chronic nephritis. No less than 30% of patients who had suffered from pre-eclamptic toxæmia were found to have a residual hypertension, i.e. with blood pressures above 140/90. Neither the duration of the toxæmia nor its severity influenced further development of hypertension, but the risk of residual high blood pressure rose sharply with age from 11.5% at 20-24 years to 64% at 45-49 years. Some 37% of women who had had a bout of pre-eclamptic toxæmia developed this again in subsequent pregnancy. Toxæmia seemed to have no effect on the fetus, provided it survived the neonatal period.

(Continued on advertising page 44)

GENERAL PRACTICE

FIRST NATIONAL SCIENTIFIC CONVENTION, COLLEGE OF GENERAL PRACTICE OF CANADA

AN INTERESTING new convention made its first appearance in Canada at the Sheraton-Mount Royal Hotel in Montreal on March 4-6, 1957. This was the first national scientific convention of the College of General Practice of Canada. The convention was a testimony to the remarkable thirst for knowledge prevailing among the family doctors of this country. Before the convention opened at 9.30 on Monday morning, doctors were already visiting scientific and technical exhibits, and there was a long line-up at the registration desk. We are informed that the total registration was approximately 1200, with about 800 physicians. During the convention some 90 new applications for membership of the College of General Practice were received.

A popular feature of the convention was the free health examination for physicians. This was available to any physician attending the convention, whether he was a College member or not. A brief history was taken, a complete physical examination made, and certain standard aids to diagnosis were then applied, including a chest radiograph, electrocardiogram, and examinations of blood and urine. No less than 270 physicians availed themselves of these facilities. The clinic was in the charge of Drs. J. Z. Gillies and Hubert L. Saint-Pierre, and financial and technical assistance for it was obtained from the Confederation Life Association, the Provincial Committee for the Prevention of Tuberculosis, Royal Victoria Hospital and Queen Mary Veterans Hospital, Montreal.

There were 24 scientific exhibits. All were of value, but it is impossible in this space to mention more than a few. Queen Mary Veterans Hospital had a good exhibit of their work on tranquillizing drugs, showing in particular the differential indications for each of the common agents. Dr. Lennox Bell of Winnipeg had a valuable demonstration of the nature and treatment of wringer injuries of the arms occurring in infants and young children. The Canadian Diabetic Association demonstrated its usefulness to the family doctor in the care of his diabetic patients. The diets displayed on trays at the booth suggested that the diabetic life need not be an unhappy one. The Montreal Neurological Institute had gone to considerable trouble to put on a demonstration of "epilepsy—a symptom, not a disease". The point of the exhibit was to show that every case of epilepsy requires full investigation before it is treated. Several exhibits came from the United States. There was an impressive demonstration of plastic repair of wounds of the face by Dr. W. A. Lange of Detroit; this physician also gave an address on the same subject during the scientific sessions. Similarly, Dr. R. A. Davison, of the College of Medicine, University of Tennessee, had an exhibit illustrating his medical school department of general practice, about which he also spoke at the scientific sessions.

SCIENTIFIC SESSIONS

The convention was opened on Monday morning with Dr. C. L. Gass in the chair. The representative of Cardinal Léger, His Excellency Monsignor Morin, pronounced the invocation, after which Dr. Jean Grégoire of the Ministry of Health, Province of Quebec, brought greetings in which he stated that his most valued experience was as a country general practitioner. Addresses of welcome were heard from Dr. Marc Trudel, President of the College of Physicians and Surgeons of the Province of Quebec, Dr. Ian Grant, President of the College of General Practitioners of Great Britain, and Dr. L. Mailloux, President of the Quebec chapter.

From a full and varied program, it is only possible to highlight a few of the features. Dr. Malloy drew attention to the value of quinacrine in 1/100 mg. maintenance doses every second day, or chloroquine in 1/150 mg. doses twice a day in light sensitivity. If bronzing occurred, quinacrine could be discontinued for a little while until this faded. In asthma, the potassium content of the sputum is much greater than normal; good results in treatment have been found from doses of 3 g. a day of calcium glutamate and of a potassium salt. Dr. Beck discussed recent advances in poisoning with particular reference to the use of nalorphine in morphine poisoning. Used in 5-10 mg. doses intravenously, it would restore respiration to normal within three or four minutes in some cases; it might be necessary to repeat the dosage from time to time to a total dose of 40 mg. Supportive therapy was to be continued as well. Nalorphine should not be used to restore consciousness. In barbiturate poisoning, there were two new drugs, amiphenazole and bemegride. The latter would probably replace the former, being more effective in doses of up to 1500 mg. intravenously. Skilled supervision was needed, and there were certain side-effects such as a bizarre psychic disturbance which might complicate treatment. Dr. Paré mentioned the form of pulmonary heart disease which is secondary to pulmonary emphysema and is now seen because emphysema patients tend to live longer. Important points for the G.P. were to give antibiotics to all these patients, even without evidence of infection; to use aerosol bronchodilators, to abstain from using high concentrations of oxygen for fear of producing confusion or coma, and also to be sparing with sedation.

In a discussion of disorders of pigmentation, Dr. Curtis remarked upon the value of a 20% ointment containing the monobenzyl ether of hydroquinone (Benoquin) for depigmentation of freckles and chloasma. The ointment has to be applied at night for several weeks before an effect is produced. It can also be used as a prophylactic against sunburn twice a week in summer and twice a month in winter.

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On Monday afternoon there was a panel discussion on diabetes. Dr. Lillian Chase noted the high incidence of diabetes among the population, and that this incidence was going up because many children of diabetic parents also had this disease, and the parents tended to live longer than heretofore. The appearance of degenerative disease in diabetes usually meant that control of the disorder had been poor. She described diabetic treatment as a long-term partnership between the patient and the physician. Coma was no longer a significant cause of death, and tuberculosis had also been controlled; cardiovascular disease was now the chief cause of death. The general practitioner must take more responsibility for the diabetic, and would really require a minimum of six half-hour sessions in his office to start a new case off on insulin treatment. After that they should be seen monthly for the first year and then three-monthly every year. Dr. H. S. Everett discussed diabetes in the middle-aged woman. He believes that every diabetic should be given insulin, that the diabetic diet should be weighed, and that it should be moderate in carbohydrate, generous in protein, low in fat and very low in animal fat. It should be adjusted to get the urine sugar free and the blood sugar normal. Dr. Gordon Brown made various points about treatment of diabetes in children. In patients with a 25-year history of diabetes and without degenerative disease, insulin had almost invariably been started at the onset and used continuously. The diabetic diet had been weighed, and the urine had been tested more than once a day with conscientious adjustment of insulin dose. The child should be educated from the onset about its diet, should be given an adequate diet, and should if possible attend a diabetic camp. Efficient early treatment in childhood was most important.

On Tuesday morning, Dr. Lennox Bell gave a classification of causes of prolonged fever. He gave eight principal headings—specific infections, bacteriæmia, localized infections, aseptic fever due to tissue death as in myocardial infarction, toxic and allergenic agents, diseases involving blood forming organs and lymph nodes, especially Hodgkin's disease, malignant tumours such as hypernephroma, and collagen diseases. The diseases most commonly missed were tuberculosis, malignant tumours and specific infective processes within the abdomen. Occasionally cases of habitual hyperthermia were seen in persons whose thermostat was set a bit above the usual.

Dr. Medovy gave a series of brief news items on recent advances in pædiatrics. He said that epidemic diarrhœa of the newborn was no longer of unknown etiology. Strains of *Bacillus coli* were involved, two major types having been seen in Winnipeg. Neomycin, 50 mg./kg. per day, by mouth was a really effective drug. In ward infections, every baby should be treated and rectal swabs should be used diagnostically. Discussing obscure anæmias of infancy, he mentioned the infant which has suffered blood loss at birth, e.g. after Cæsarean section with the placenta on the anterior uterine wall. Prompt transfusion was needed. The infant delivered per vaginam with a velamentous placenta required 50 c.c. of the mother's blood immediately. Sometimes a baby had bled into the maternal circulation without obvious evidence of bleeding. Another cause of infant anæmia was a copper deficiency associated with a non-hæmolytic anæmia and œdema. Dr. Medovy stressed the fact that the low incidence of certain infectious diseases due to immunization procedures had led to a low level of immunization later in life. Twenty-five per cent of women studied in a Winnipeg clinic proved to be Schick-positive, hence the need for recall doses at intervals. The Salk polio vaccine had more than justified its earlier hopes. Dr. Medovy mentioned that the rheumatic subject was the person (3% of the population) responding to streptococcal infection with a rheumatic reaction. Such persons had to be treated for the rest of their life with prophylactic penicillin, and free penicillin was available in Winnipeg for this purpose. Turning to poisoning in children, he said that salicylate was the commonest drug ingested. The next commonest were hydrocarbons, such as are contained in certain cleaning fluids, often stored in pop bottles.

On Tuesday afternoon a panel discussed ataractic drugs. First Dr. Lehmann discussed their use in psychotics. The general practitioner was important in this field in providing maintenance therapy for psychotics who had been discharged from hospitals, and in emergency treatment. He cited cases to show the use of ataractic drugs, for example in maintenance at home with reserpine or in transportation by air to a hospital while under the influence of chlorpromazine. In an emergency, chlorpromazine should be given until the patient was continuously drowsy. The general practitioner must see to it that psychotics discharged from hospital were actually taking their drugs. Dr. Lennox Bell took up the subject from the internist's standpoint. "Are we overdoing the ataractics?" he asked. All these drugs are extremely effective in dealing with anxiety and tension, but perhaps the general practitioner is treating himself rather than the patient. A certain amount of anxiety and tension are necessary if individuals are to perform brilliantly rather than bovinely. The anxiety associated with malignant disease or other serious organic disease may call for ataractic drugs. Tension headache responds well to meprobamate, nausea and vomiting to promazine, and hiccups to chlorpromazine, which is also useful for withdrawal symptoms of barbiturate addiction. For the general practitioner, reserpine should be primarily used as an anti-hypertension drug. None of these drugs will ever replace the psychotherapy that the family doctor is so well fitted to give. Dr. Bellemere stressed the aid these drugs give in helping the patient to understand his emotional problems and stabilize his life. Dr. Cloutier spoke as head of a psychiatric unit in a general hospital, confining his discussion to chlorpromazine, which is particularly useful in agitated states. It has a use in schizophrenia—in paranoid states and panic, particularly. Depression does not respond so well, unless it is an agitated depression. Chlorpromazine is being prescribed excessively, because it relieves the physician of his guilt feelings stemming from his lack of interest in patients with anxiety or from his frustration in dealing with them. It is only an adjuvant. In summing up, Dr. Sarwer-Foner said that the physician must ask himself two questions about an ataractic drug. What is its pharmacological profile? What are its side-effects? He must also remember that these drugs potentiate narcotics, analgesics, alcohol and anæsthetics.

David Bier Studios, Montreal

The Executive of the College of General Practice, 1957-58, with the exception of the President, Dr. Jack McKenty. From left to right: Dr. W. V. Johnston, Toronto, Executive Director; Dr. C. L. Gass, Tatamagouche, N.S., Past President; Dr. P. B. Rose, Edmonton, President-Elect; Dr. E. C. McCoy, Vancouver, Chairman, Board of Representatives; Dr. L. Mailloux, Montreal, Honorary Treasurer.

Dr. Jack McKenty, Winnipeg, President of the College of General Practice of Canada, 1957-58.

SOCIAL EVENTS

Formal luncheons were held on all three days of the convention. The speaker at the Monday lunch was Dr. Jean Charbonneau, whose subject was announced as "Choose a Pleasant Disease". However, the catalogue of unpleasantnesses enumerated by the speaker, mostly in connection with male urology, suggested that the disease of choice lay in other fields. At the Tuesday lunch, the guests were entertained by an address by Dr. Ian Grant, President of the College of General Practitioners of Great Britain, who described the formation of the College in Britain two years before the appearance of its Canadian counterpart. Progress had been on parallel lines, for the two aims of the British College were education and maintenance of standards of general practice. There were 4000 members of the British College, and they had a research committee of over 600 members, who were interested in doing group research. The question of a postgraduate examination for general practitioners was under consideration. Dr. Grant then entranced his hearers with a witty description of his visit to a small principality in Arabia, where almost overnight the discovery of oil had transformed an utterly impoverished eastern potentate into the proud owner of a fleet of Cadillacs and an air-conditioned modern hospital. At the Wednesday lunch, general practitioners were addressed by Dr. J. S. DeTar, President of the American Academy of General Practice, who traced the progress made by that body in the 11 years of its existence. Whereas at its inception the majority of medical students were interested in entering a specialty after graduation, there was now a trend towards entry into general practice, which was full of opportunities for young men in the United States, whereas the specialties were overcrowded. A recent survey by the Academy had shown that there was an improvement in the hospital privilege status of general practitioners in many states. Dr. DeTar emphasized that men must be general practitioners because they wanted to be, and not because they had failed to enter a specialty.

There were two evening functions, both highly successful. On Monday evening the Mayor of Montreal, Mr. Jean Drapeau, and the City of Montreal entertained the convention participants and their wives at the Chalet on Mount Royal. Cocktails and a buffet supper of magnificent proportions were served and there was dancing. Nevertheless, a fair proportion of members of the College of General Practice reappeared in the hotel to attend the Annual General Meeting of the College which continued for two and a half hours. On Tuesday evening the College of General Practice held its first annual dinner in the Sheraton-Mount Royal Hotel, at which the guest speaker was the Honourable Paul Martin, Minister of National Health and Welfare. Mr. Martin emphasized that the Federal Government's proposed hospital insurance plan would not interfere with the operation or ownership of Canadian hospitals. He pointed out that the institution of hospital insurance would create many complex administrative, accounting and operational problems for Federal and Provincial governments and hospitals. "I am sure," he said, "that the idea of state ownership or control of hospitals would be repugnant to the vast majority of the people of Canada." The hospital insurance plan would go a long way towards solving the problem of operating deficits in hospitals, without en-

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couraging extravagances. Mr. Martin thought that the health insurance plan would support the general practitioner and help him to serve his patients better. It would now be possible for him to take advantage of diagnostic services which he at present hesitated to recommend for some patients. He announced the approval of a government grant of $10,000 towards a survey of general medical practice which the College of General Practice is currently carrying out. Later in the evening, Dr. C. L. Gass, the outgoing president, gave his valedictory address, and his badge of office was transferred to the incoming president, Dr. Jack McKenty of Winnipeg. The evening closed with an entertainment and dancing.

COLLEGE OF GENERAL PRACTICE OF CANADA— SASKATCHEWAN CHAPTER

THE SASKATCHEWAN CHAPTER of the College of General Practice of Canada is arranging for its first annual scientific convention to be held at the Hotel Saskatchewan, Regina, April 24-27. The program will open on Thursday morning with an address by the President, Dr. Wasylenki, and will include items by local speakers, visitors from Canadian faculties of medicine, and visitors from the United States. The last named will include Dr. Walter F. Kvale of the Mayo Clinic and Dr. B. C. Schiele of the University of Minnesota, while Canadian visitors will include Dr. A. D. McLachlin, professor of surgery, University of Western Ontario, and Dr. E. M. Robertson, Queen's University. Subjects for discussion include the modern treatment of hypertension, tranquillizing agents for nervous disease in general practice, management of common fractures in practice, chronic occlusive arterial disease, treatment of cardiac emergencies, uterine hæmorrhage, abdominal emergencies, mental problems of aging, diarrhœa in infancy, office diagnosis of gynæcological cancer, pruritus ani, respiratory infection in children, and the surgical management of the diabetic foot. Scientific and technical exhibits have been procured for this meeting and there is an interesting program of entertainment, including a reception for doctors and their wives to be followed by a banquet and dance.

THE DESPERATE DOCTOR

Letter from general practitioner produced by very deaf old lady seen at British hospital outpatient department:

"Go to any hospital. Ask to see the psychiatrist. Tell him you are forever moaning. I really cannot stand it. I have my own troubles."—*British Medical Journal*, March 16, 1957.

MEDICAL MEETINGS

THE MONTREAL PHYSIOLOGICAL SOCIETY

RECENT STUDIES ON SEROTONIN*

SIDNEY UDENFRIEND,†
Bethesda, Maryland

The following studies on the biochemistry of serotonin have been carried out to develop tools for determining the physiological roles of serotonin. Thus, experiments have been carried out on the enzyme 5-hydroxytryptophan (5HTP) decarboxylase to find inhibitors to block serotonin formation or alternate amino acid substrates which could yield amines with more potent action than serotonin. The relationship of pyridoxal phosphate, a requirement of this enzyme, to serotonin formation *in vivo* has also been shown, marked serotonin depletion appearing in brain, blood and tissues of pyridoxine-deficient chickens. Biochemical and pharmacological studies with 5HTP, the amino acid precursor of serotonin, reveal that it, too, is a useful tool in studies on serotonin physiology and pathology. Thus 5HTP penetrates into brain and is gradually converted to serotonin centrally, thereby permitting brain serotonin levels to be increased to any desired level, in a simple fashion. This cannot be achieved by peripheral administration of serotonin itself. 5HTP also increases the serotonin levels in many other tissues. Administration of this amino acid provides a useful way in which to administer serotonin to obtain elevated levels of this amine over long periods of time. In man 5HTP has proved to have hypotensive activity and to produce marked gastrointestinal motility when administered in doses of 25-75 mg. of the D,L mixture per patient. Because of these toxic manifestations no attempt has as yet been made to determine the central effects of 5HTP in man. In animals its effects are similar to those of L.S.D. and the actions of 5HTP and L.S.D. have been shown to be additive. D,L-5HTP has been resolved and it has been shown that only the L antipode can be enzymatically decarboxylated to serotonin and only this antipode possesses pharmacological activity.

Serotonin itself has been found to be present in the lung of many animal species and it is felt that its release during anaphylaxis may account for some of the pulmonary effects which cannot be attributed to histamine. In this regard it has been shown that in rabbits free serotonin as well as histamine is released into blood during anaphylactic shock. The role of serotonin in anaphylaxis is being investigated and attempts will be made to determine whether some of the manifestations may be blocked by serotonin antagonists.

In patients with malignant carcinoid, attempts to inhibit flushing, bronchoconstriction and other effects were also made with serotonin antagonists and other drugs: L.S.D., brom-L.S.D., reserpine and chlorpromazine; only the latter was found to be active. Radioactive studies on these patients indicate that serotonin in the tumour is made and liberated very slowly (half-life of 10 days). It is now apparent that the incidence of malignant carcinoid is much higher than had been generally considered and that the simple nitroso-naphthol test on urine is a reliable diagnostic test for this disorder.

Enzymatic destruction of serotonin is carried out by the enzyme, monoamine oxidase. Attempts are being made to purify this enzyme and determine its properties.

*Abstract of a special lecture, arranged through the courtesy of Frank W. Horner Ltd., presented November 23, 1956.

†National Heart Institute.

In vivo inhibitors of this enzyme are being sought since such compounds should prove as valuable in studies on serotonin physiology as have cholinesterase inhibitors proved valuable in acetylcholine studies. Iproniazid, which has been widely used in this respect, was found to have surprisingly little antimonoamine oxidase activity *in vivo* except in certain parts of the brain. Binding of serotonin by platelets may represent another mechanism for inactivating this potent agent.

SECOND REGULAR MEETING

The second regular meeting of the Society in the 1956-57 season was held on Monday, January 14, in the Medical Building of McGill University. Abstracts of three of the four scientific papers follow in abstract form.

1. *The Effect of Hypertonicity on the Release of Histamine in vitro*, by Fred J. McIlreath, Jr., Department of Physiology, McGill University.

It has been suggested that histamine is enclosed in a diffusible form within a mitochondrion-like particle. The author presented further experiments supporting this view. The release of histamine from dog liver homogenates by incubation with basic compounds has been well established. The particles are suspended in an isotonic medium and incubated with the releasing compound for periods of 15 and 30 minutes at 38° C. Control samples to which no liberator is added are treated in the same manner.

It has been found that if the liver particles are suspended in hypertonic sucrose (1.2M) the release of histamine by diaminodecane, toluidine blue and stilbamidine is greatly reduced from the values found by incubation in isotonic sucrose. There was no change in the action of 48/80, saponin and sodium taurocholate. Further studies showed that histamine could be liberated from the liver particles by NaCl.

2. *Urinary Excretion of Aldosterone in Late Pregnancy*, by E. H. Venning *et al.*, McGill University Clinic, Royal Victoria Hospital.

The finding of a progressive increase in the excretion of aldosterone in pregnancy led the authors to investigate the output of this substance during the immediate ante- and post-partum periods in an attempt to correlate the excretion of aldosterone with changes in electrolyte metabolism. Four healthy pregnant women underwent balance studies with constant intakes of fluid, sodium, potassium and protein. The excretion of these substances was followed before and after delivery as well as that of aldosterone and of 17-hydroxycorticosteroids.

While there was considerable variation in the levels of aldosterone excretion in the various patients, in general the degree of sodium retention in late pregnancy could be correlated with changing levels of aldosterone excretion. The sodium diuresis which normally occurs after delivery was associated more closely with decreases in aldosterone excretion than with 17-hydroxycorticosteroids.

3. *Iodide Secretion by the Parotid Gland*, by A. S. V. Burgen and P. Seeman, Department of Physiology, McGill University.

Inorganic iodide is secreted by the parotid gland of the cat and dog at levels greater than the concurrent plasma levels, whereas in the submaxillary saliva the concentration is always lower than in plasma. When parotid secretion is started, there is an initial high concentration transient ranging up to 100 times the plasma level. This occupies an amount of saliva equal to 0.05-0.10 ml./g. gland and is directly proportional in magnitude to the interval since the previous period of stimulation. After the transient is complete, the S/P ratio settles down to a steady value of 5-10 with a slight negative dependence on the rate of saliva secretion.

Both transient and steady state levels can be depressed by raising the plasma iodide. Depression first appears at 0.5 mEq./l. and if the plasma level exceeds 5 mEq./l. the S/P ratio is depressed below 1 and the flow concentration curve resembles very closely that found in the submaxillary saliva. There is also a general resemblance to the chloride concentration curve. A similar depression can be produced by ClO_4.

Clearance calculations give a resting *blood* clearance of 0.3-0.4 ml./g. min. and on stimulation this rises smoothly proportionately to the rate of saliva secretion to reach a maximum of 2.5-3.0 ml./g. min. These are of the order expected for the total gland flow.

Logothetopoulos and Myant (*J. Physiol.*, 134: 189, 1956) have shown in hamsters and mice that iodide is concentrated exclusively in a restricted part of the duct system of the salivary gland, and the evidence presented, based on the properties and time course of the iodide transient, supports this. The most important implication of this work is that a large part of the blood traversing the salivary gland must perfuse the duct system.

4. *Effects of Some Hallucinogens on the Potentiation of Hexobarbitone Hypnosis produced by Serotonin and Reserpine*, by G. C. Salmoirraghi, Department of Physiology, McGill University.

A. H. NEUFELD

THE SEMI-CENTENNIAL OF THE ACADEMY OF MEDICINE, TORONTO

To mark the celebration of the 50th anniversary of the founding of the Academy of Medicine, Toronto, over 800 Fellows, wives and guests assembled for dinner in the Royal York Hotel on Tuesday, March 5, 1957. The benediction was pronounced by the Reverend R. S. K. Seeley, Provost of Trinity College, following which the President, Dr. E. C. Fielden, welcomed the assembly, and outlined briefly the origin of the Academy which resulted from the amalgamation in 1907 of four local medical societies. A toast to the Charter Fellows was proposed by Dr. J. W. Scott, Editor of the *Bulletin of the Academy of Medicine*, and responded to by Dr. W. E. Gallie, who was the representative of the nine surviving founders on this occasion.

Honorary Fellowships were conferred on Dr. Boyd Neel, Principal, Royal Conservatory of Music, University of Toronto, who was presented by Dr. E. B. Tovee; on the Honourable Lester B. Pearson, Minister of External Affairs, who was presented by Dr. W. A. Dafoe; and on Dr. Earle P. Scarlett, Chancellor of the University of Alberta, who was presented by Dean J. A. MacFarlane. Each of the recipients of Honorary Fellowship responded fittingly, and the address of the evening was the scholarly response by Dr. Scarlett under the title "More than with a Trumpet".

This highly successful dinner inaugurated a week of festivities at the Academy where an extensive array of library and museum exhibits was displayed in Open House.

MAIMONIDES MEDICAL SOCIETY OF ONTARIO

The annual dinner dance of Maimonides Medical Society of Ontario will be held on the evening of Thursday, May 30, 1957, in the Barclay Hotel, Toronto.

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B.M.A. - C.M.A. Conjoint Annual Meeting
Edinburgh, July 18 - 25, 1959

INFORMATION FORM

NAME.....

ADDRESS.....

I shall be accompanied by.....

(If any children please state their sex and present age) .....

I prefer to travel by ship .....
by air ..... (a) regular schedule
..... (b) charter flight

I prefer to travel First Class .....
Tourist Class .....
Cabin Class .....

Ships from Canada have only two classes (First and Tourist). Ships from New York also carry Cabin Class.

I prefer to leave from Montreal .....
Quebec .....
New York .....

In addition to Edinburgh, I wish to visit the following :

England	Russia	Portugal	Germany
Holland	Hungary	Denmark	France
Switzerland	Ireland	Czechoslovakia	Norway
Spain	Belgium	Yugoslavia	Finland
Sweden	Italy	Scotland	Austria

I wish to travel on a conducted tour. Yes..... No .....

I prefer independent, arranged travel. Yes..... No .....

I wish to rent a self-drive car. Yes..... No .....

I wish to travel by chauffeur-driven car. Yes..... No .....

I wish to travel on motor coach tours. Yes..... No .....

I expect to be absent from Canada for ..... weeks.

I prefer to arrange my tour in advance of the Edinburgh meeting .....
after the Edinburgh meeting .....

I understand that accommodation in Edinburgh will be available, Saturday, July 18 to Saturday, July 25.
I am prepared to accept the housing assigned by the B.M.A. Committee. My preference is for:

Hotel..... Rooming house..... Private hospitality.....
(Please indicate in numerical order)

I wish to leave Canada in April .....
May .....
June .....
July .....

I wish to return to Canada in July .....
August .....
September.....
October .....

I wish the following class of land travel. De luxe .....
Standard .....
Thrift .....

On De luxe travel, rooms have private baths throughout—hotels are all de luxe and first-class.
On Standard travel, rooms have private baths wherever available—hotels are all first-class.
On Thrift travel, small, comfortable, specially chosen hotels are used. Rooms do not generally have private baths.

My local travel agent is .....

.....

IT IS CLEARLY UNDERSTOOD THAT THE COMPLETION OF THIS FORM IN NO WAY BINDS ANY MEMBER OF THE CANADIAN MEDICAL ASSOCIATION

Please complete and return this form to :

UNIVERSITY TOURS LIMITED, 2 College Street, Toronto.

LETTERS TO THE EDITOR

AMERICAN RADIUM SOCIETY

To the Editor:

The American Radium Society for the first time in its history is meeting outside the boundaries of the United States. This, the 39th Annual Meeting, will be held in the Château Frontenac in Quebec City on May 30 and 31 and June 1.

The Society would be very happy indeed to have as guests any members of the Canadian Medical Association who are particularly interested in radiotherapy or the treatment of cancer.

NORMAN MCCORMICK,
President, American
Radium Society.

1687 Wyandotte St. East,
Windsor, Ontario,
March 6, 1957.

THE LONDON LETTER

(*From our own correspondent*)

CRISIS IN THE NATIONAL HEALTH SERVICE

Once again the Government has demonstrated that complete lack of understanding of professional standards which has characterized its dealings and those of its predecessors ever since the introduction of the National Health Service. Without any prior consultation with the representatives of the profession the Prime Minister has announced the setting up of a Royal Commission to inquire into doctors' pay. This has been accepted by the profession as a blunt rejection of the present claim for increased remuneration. At a meeting on the day following the Prime Minister's announcement the general medical services committee of the British Medical Association decided to call an emergency meeting of local medical committees throughout the country at an early date, and is recommending to this conference that, unless the Government agrees to an immediate and satisfactory agreement of the profession's claim, or to arbitration, general practitioners throughout the country will be advised to send in their resignations from the Service. An alternative scheme for the organization of general practice will be announced in due course.

At a statement after this meeting it was said that the committee "learned with anger and resentment of the Government's cynical disregard of the committee's just claim for an adjustment in the remuneration, the level of which has not been changed since April 1951". At this stage it is difficult to foretell what the profession's reaction will be to a call to resign from the National Health Service, should the Government prove adamant. What is clear, however, is that the Government's cavalier and discourteous attitude has aroused deep resentment, even among those members of the profession who were not enthusiastic about the timing of the present claim for increased remuneration. If the sick citizen does not suffer it will not be the Government's fault, but it is not going too far to say that the whole future of the National Health Service may be at stake.

DIABETIC DRIVERS

A recent decision in the High Courts has caused a certain amount of concern among diabetics. A diabetic of some 12 years' standing was found by the police in a semi-comatose state in his car. He was in a state of hypoglycæmia, and was charged by the police with unlawfully driving a motor-car while under the influence of a drug to such an extent as to be incapable of having proper control of the vehicle. The local justices dismissed the charge on the grounds that insulin is not a "drug". The prosecution appealed, and the High Court allowed the appeal.

The worrying feature of the case from the point of view of the diabetic driver is that, according to press reports of the case, the Lord Chief Justice expressed the view that "if people were in a state of health which either of itself rendered them liable to go into a coma, or the remedies for which might send them into a coma, they must not drive, because of the danger that would result to the rest of Her Majesty's subjects". Their Lordships spent much time learnedly arguing that insulin is a drug for the purpose of the Road Act—a fact which has all along been recognized by the medical profession. The crux of the problem now facing diabetics is the interpretation of the Lord Chief Justice's opinion. Does this mean that no diabetic who takes insulin can drive a car? In theory, if not in practice, this is quite a possible interpretation according to the wording of the present Road Traffic Act. To date, the common practice in this country has been for doctors to advise diabetic patients who are liable to hypoglycæmic reactions not to drive a car, and anyone ignoring this advice and being found in charge of a car while in such a state has obviously to accept the full rigours of the Law. The case which does not seem to be covered by the Law as it now stands is the usually well-controlled diabetic who unexpectedly happens to have a hypoglycæmic reaction while driving. Such an individual should clearly not be penalized, and the question has been raised whether the Road Traffic Act should be amended accordingly.

ARTIFICIAL INSEMINATION AND DIVORCE

An undefended divorce action in the Court of Session, Edinburgh, has raised the question of whether a woman who had been artificially inseminated, and who had a child as a result, could be said to have committed adultery. According to the husband, who was seeking a decree of divorce, his wife had been in touch with him over the question of procreating a child by this method. In view of the important question of public policy involved, the Judge refused to give a decision and continued the case in order that he could report it to the Lord Advocate, representing the public interest. His Lordship said that it had not yet been judicially decided in the law of Scotland whether artificial insemination resulting in the birth of a child was adultery, or, alternatively, whether it was a ground of divorce in Scotland. It was suggested by counsel for the pursuer that the question of artificial insemination did not arise in the case, as the issue was one of non-access. To this submission the Judge replied: "But questions may arise as to whether the old law of non-access has not been innovated upon to some extent as a result of either the advance or retrogression of medical science, according to the way you look at it. It may well be that the whole law of non-access may have to be looked at again."

London, March 1957. WILLIAM A. R. THOMSON

INTERESTED IN CANADIAN SURGERY?

If you are, then we are going to make it easier for you to see what Canadian surgeons are doing to advance the art and science of surgery. On October 1 next the first issue of a new C.M.A. publication, the *Canadian Journal of Surgery*, will see the light of day. It will contain original articles, case reports, notes on the history of Canadian surgery, and other interesting features. Dr. Robert Janes, Professor of Surgery in the University of Toronto, heads a board of keen and experienced surgical editors. Why not give us your financial support now, by mailing back the coupon which appears on page 416 of the issue of March 1, together with a cheque for $10?

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OBITUARIES

DR. ROBERT EVATT MATHERS died on February 22 in the Victoria General Hospital, Halifax, N.S., at the age of 83. He had been a patient in the hospital for a period of two weeks.

Dr. Mathers was a Fellow of the Royal College of Surgeons of Canada, and a Fellow of the American College of Surgeons. He was a graduate of Dalhousie Medical College, and specialized in eye, ear, nose and throat in New York University. He commenced practice in Halifax in 1900; in 1906 he entered into partnership with Dr. Arthur Doull in his chosen speciality, and this partnership lasted for 41 years until Dr. Mathers retired in 1947. He was a consultant to the Protestant Orphans Home, Victoria General Hospital, School for the Blind, School for the Deaf, and the Children's Hospital.

During his lifetime, Dr. Mathers travelled extensively, his most unusual visit being to the Island of Tristan da Cunha in the South Atlantic where the natives kept him busy examining eyes, ears and throats.

On September 30, 1902, he married the former Ellen Farnham Ledder. She died in September 1928. He was a member of the Phi Rho Sigma Fraternity, and was one of the Grand Councillors for a period of three years. He was also a member of St. Paul's Church.

He is survived by his second wife, the former Rita Phillips of Truro, one sister, Mrs. Catherine Neil of Halifax, and two nephews, Harry I. Mathers and Evatt R. Mathers of Halifax.

DR. R. EVATT MATHERS

AN APPRECIATION

Dr. R. Evatt Mathers, whose death occurred on February 22, was born in Halifax in 1874. He received his academic education in the schools of Halifax and at Dalhousie University. Having decided to study medicine, he went to New York where he entered the Medical School of New York University (N.Y.U.—Bellevue Medical School), and having received his M.D. degree at once began his postgraduate studies in the specialty of eye, ear, nose and throat. In this course he worked in the nose and throat clinic of Dr. Cornelius Coakley, and in the eye clinic of Dr. John E. Weeks, two of the outstanding men in America, at that time, in their respective fields.

Dr. Mathers was an apt and keen student, and on the completion of his course was offered inducements to stay on in New York but he preferred to return to Halifax, where he began the practice of his specialty in 1901. In 1906 he associated himself with Dr. Arthur Doull, a partnership that lasted for 41 years until Doctor Mathers's retirement in 1947. As the years went by, Dr. Mathers devoted himself more and more to diseases of the eye, and in his many years of active work rendered a service to the people of Halifax and of Nova Scotia of a quality that was probably not excelled in Canada.

In 1910 Dr. Mathers received the appointment of clinical lecturer in Dalhousie Medical College in the department of eye, ear, nose and throat. He was made professor in 1928, holding the chair until his retirement in 1936, when he was made emeritus professor.

Dr. Mathers was a man of high intellectual integrity, disliking evasion and dissembling, but while frowning on the transgression was very tolerant of the transgressor.

In his professional relations, he maintained the highest ethical standards, and in his dealings with his fellow man he followed the golden rule.

It might well be said of Dr. Mathers as Sir William Osler wished it might be said of him:

> "I have loved no darkness,
> Sophisticated no truth,
> Nursed no delusion,
> Held no fear."

Dr. Mathers had an active and rewarding life and he died full of years and honours, leaving to his many friends precious memories that will endure while memory lasts.

LUTHER MACKENZIE, M.D. and
S. R. JOHNSTON, M.D.

DR. GEORGES PHANEUF, 61, died in St. Johns, Que., on February 20. He was born in St. Antoine-sur-Richelieu and graduated from the University of Montreal in 1921. He studied abroad for four years at Strasbourg and Paris before opening an office in St. Johns in 1924. Dr. Phaneuf became attached to the St. Johns Hospital and was chief surgeon there until December 1951.

He is survived by his widow.

DR. NOEL R. RAWSON, 73, died in St. Boniface Hospital on February 27, following an auto accident. Born in Bradford, England, he qualified at the London Hospital in 1911. In the First World War he was a battalion medical officer and then practised in England and Wales until coming to Canada, where he practised from 1929 to 1931 at Melita, Manitoba. He then obtained the Diploma in Public Health from the University of Toronto. In 1932 he was appointed epidemiologist in the Manitoba Department of Health and Public Welfare. In 1944 he volunteered for a special assignment at Chesterfield Inlet, and for his services during a typhoid epidemic at Cape Dorset he received the Order of the British Empire. Following this he became medical director for the St. James-St. Vital-Fort Garry health units, where he served until his retirement in 1954. At the time of his death he was acting medical director of the Steinbach health unit.

He had been a member of the first Boy Scout troop organized by the late Lord Baden-Powell and retained his active interest in the Scout movement. He was twice decorated for his outstanding work with the Order of Saint John of Jerusalem.

His widow and a brother survive him.

DR. CLIFFORD HUGH SMYLIE, 63, died in Toronto on March 8. He was born in Toronto and graduated from the University of Toronto in 1925. He served overseas with the 1st Canadian Tank Battalion in World War I. After graduation Dr. Smylie practised for 12 years in Northern Ontario at Arnstein, Monteith and Matheson. He moved to Toronto in 1941, and retired in 1954.

He is survived by his widow, one daughter and three sons.

DR. EVARTS A. GRAHAM—We regret to announce the death of the distinguished American thoracic surgeon, Dr. Evarts Ambrose Graham, emeritus professor of surgery in the Washington School of Medicine, St. Louis, and former surgeon-in-chief at the Barnes Hospital and St. Louis Children's Hospital. Dr. Graham, who has been described as "probably the greatest surgeon produced anywhere in the world in the first fifty years of this century", died in hospital at St. Louis on March 4 at the age of 73. He was the first surgeon in the world to perform a successful removal of lung for cancer; this was done in 1933 and the patient in question is still alive and well.

Dr. Graham's name is also associated with the introduction of cholecystography, which he first described in 1924. Dr. Graham was known throughout the whole world for his work in lung surgery; among his many honours came the presidency of the American College of Surgeons in 1940-41. He was also editor of the *Journal of Thoracic Surgery* and the *Yearbook of Surgery*. In 1950 he received the Distinguished Service Medal of the American Medical Association. Over a period of years, he had emphasized the connection between cigarette smoking and lung cancer; it was of this malady that he ultimately died. His loss will be felt on both sides of the Atlantic.

ABSTRACTS *from current literature*

MEDICINE

Pathogenesis of Cardiac Rupture Due to Myocardial Infarction.

J. H. LUNSETH AND M. RUWALDT: *Dis. Chest*, 30: 499, 1956.

A clinical and pathological study was made of 26 cases of myocardial infarction with rupture. The average age was 70.5 years; there were 16 males and 10 females. There was no previous history of infarction in any case. Based upon histological study, the age of the infarct at the time of rupture was less than two weeks in all, less than one week in 19, and less than three days in 10. Etiological factors such as hypertension, over-exertion, fatty infiltration and granulocytic exudation were not of particular significance.

A factor considered in this series to be important in the cause of cardiac rupture in myocardial infarctions was *penetration of the wall by a dissecting hæmatoma.* Such a hæmatoma was found in a majority of cases. In a substantial number blood penetrated the wall by infiltration in the loose interstitial tissue between intact myocardial fibres. In a few the hæmatoma penetrated mainly through necrotic myocardial fibres. An analogy is drawn between the mechanism of this dissecting hæmatoma and that found in aortic dissection.

S. J. SHANE

Varicella Pneumonia in Adults.

R. H. FITZ AND G. MEIKLEJOHN: *Am. J. M. Sc.*, 232: 489, 1956.

Pneumonia as a visceral manifestation of chickenpox in the adult has been well characterized both as a clinical and pathological entity. The number of cases reported, however, has been small.

The basic clinical pattern of the disease is that of varicella with signs of pneumonic involvement. These include dyspnœa and varying degrees of cyanosis and cough, frequently productive of bloody sputum, developing from the second to the sixth day after the onset of the exanthem. The patient usually recovers in from two to seven days but the course may be rapid and progressive and terminate fatally. Diminution of pulmonary signs and symptoms generally coincides with subsidence of the rash. Complications are not infrequent; there may be concomitant involvement of other viscera by varicella virus; less commonly, secondary infection or thrombophlebitis has been observed. Treatment has been only supportive. Antibiotics have been used in most cases, but there has been no evidence that the illness was modified other than by protection against secondary bacterial infections. Pathological findings present features like those of other viral pneumonias.

In this paper data are presented on 12 patients with varicella pneumonia, three with fatal outcome, and the severe and not infrequently lethal nature of this complication is stressed.

S. J. SHANE

Diagnostic Thoracotomy in the Study of "Idiopathic" Pleural Effusion.

B. E. DOUGLASS, D. T. CARR AND P. E. BERNATZ: *Am. Rev. Tuberc.*, 74: 954, 1956.

Thorough clinical study of the patient and laboratory examination of the pleural fluid usually leads to an etiologic diagnosis in cases of pleural effusion. There remains a group of patients in whom these methods of study fail to explain the accumulation of fluid in the pleural space. In some of these cases thoracotomy with pleural biopsy may provide a definitive diagnosis.

In this paper, an account is presented of 21 patients in whom the pleura was examined surgically and from whom specimens for biopsy were taken in attempts to establish the cause of pleural effusion. The diagnoses established were as follows: trauma in one patient, neoplasm in six, tuberculosis in five, other inflammatory processes in seven, and indeterminate disease in two patients. The procedure appears to provide valuable aid in diagnosis as well as in prognosis and in the selection of suitable therapy.

S. J. SHANE

Diagnosis of Mitral Regurgitation by Angiocardiography.

P. W. SMITH *et al.*: *Circulation*, 14: 847, 1956.

The authors describe their method of percutaneous puncture of the left ventricle with the injection of contrast medium as utilized in dogs to depict radiographically the state of competence of the mitral valve. The competent valve before injury and the incompetent valve after surgical laceration of the mitral leaflet are demonstrated.

Thirty-one ventricular punctures in 30 patients have been carried out without mortality by these workers. The state of competence of the mitral valve has been studied in 20 of these patients. The cardioangiograms in 10 patients were interpreted as showing a competent mitral valve and in 10 patients as showing varying degrees of regurgitation.

The correlation between the cardioangiographic findings and subsequent anatomical findings at operation or autopsy is stressed. It is believed that this method holds promise for determining the presence or absence of mitral regurgitation, and its approximate degree when present.

S. J. SHANE

Massive Thrombotic Occlusion of the Large Pulmonary Arteries.

K. P. BALL, J. F. GOODWIN AND C. V. HARRISON: *Circulation*, 14: 766, 1956.

A series of 23 cases of thrombotic occlusion of the large pulmonary arteries, not due to acute massive emboli, is presented. The clinical, radiological, electrocardiographic, and pathological features are described, together with the results of special investigations in certain cases. It is concluded that thrombotic occlusion of the large pulmonary arteries can occur insidiously and present a characteristic picture of progressive right ventricular failure, the special features of which are outlined in detail. In most cases the thrombosis was secondary to embolism, but in seven it was considered to have arisen primarily in the pulmonary artery. Six of the 23 patients had mitral stenosis, which appeared to favour primary thrombosis of the large pulmonary arteries. The etiology, diagnosis, differential diagnosis, and possible treatment are discussed, and it is suggested that the diagnosis should be considered in any patient with obscure right ventricular failure, attacks of syncope, acute dyspnœa, or chest pain; and especially if there have been episodes suggestive of pulmonary infarction. Patients with mitral stenosis who deteriorate for no apparent reason and show alteration in the second heart sound and decrease in the pulsation of the pulmonary arteries, should also be suspected of having developed a massive pulmonary artery thrombosis.

S. J. SHANE

SURGERY

Three Unusual Cases of Hyperparathyroidism.

D. J. M. CRAWFORD, J. STEFANELLI AND A. F. ALVAREZ: *Brit. J. Surg.*, 44: 193, 1956.

Three cases, each unusual, of hyperparathyroidism, occurred in Trail, British Columbia, in one year. One was in a three-year-old boy with a cyst of the upper femur and a small parathyroid adenoma. Another was a 30-year-old man with osteitis fibrosa cystica, several pathological fractures, removal of a parathyroid adenoma, and following two operations for gastric and duodenal ulcers, recurrent hyperparathyroidism and removal of two more enlarged parathyroid glands which relieved his dyspepsia. The third case was a woman of 40 with a

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benign giant cell epulis of the maxilla (or osteoclastoma), scattered osteoporosis, calcification of blood vessels and removal of a malignant adenoma of the parathyroid. She died of uræmia due to nephrosclerosis due to the tumour.

Hyperparathyroidism may cause symptoms and signs of renal disease, soft tissue calcification, peptic ulceration or other more vague complaints long before the characteristic bone lesions are manifest. Calcium blood levels and urinary calcium tests vary and repeat estimations are often necessary. BURNS PLEWES

New Method of Surgical Treatment of Blood Vessel Lesions.

P. I. ANDROSOV: *A.M.A. Arch. Surg.*, 73: 902, 1956.

A paper from the Sklifosovsky Institute, Moscow, and the Scientific Research Institute of Experimental Surgical Apparatus and Tools, U.S.S.R. Ministry of Public Health; describes an apparatus for applying vascular sutures. The vessel-suturing machine consists of four parts and sutures the everted ends of the severed vessel with clips of tantalum wire; it has been used successfully on arteries as small as 1.3 mm. and as large as 15 mm. in diameter.

The method was developed when it was found that the needle-and-thread technique was not readily used by the average surgeon and resulted in narrowing and frequent thrombosis at the site of anastomosis. This apparatus is easy and almost automatic and can be used when cases are first seen by rank-and-file surgeons. If the defect in the artery is more than 3 cm. long the machine can be used to apply an autogenous vein or arterial homologous graft.

Further articles by the same author describe the techniques developed to use the apparatus in the treatment of aneurysms and in providing additional arterial blood supply for the small intestine when the latter is being fashioned to replace the œsophagus, by an anastomosis between the left internal mammary and the second radial vessel of the mobilized mesentery.

The principles involved in developing these techniques of artery suture and artificial œsophagus are stated to have been stimulated by the late Academician S. S. Yudin, and developed by numerous operations on corpses. BURNS PLEWES

Unsuspected Lesions in Anal Tissue Removed for Minor Conditions.

B. S. GORDON: *A.M.A. Arch. Surg.*, 73: 741, 1956.

Though, legally, tissues removed in the operating room must be examined and reported upon by the pathologist, the extent of the examination is not mentioned, and generally such tissues as teeth and tonsils are excepted. Many removed tissues are not examined microscopically because the incidence of unexpected findings is low. Yet in 1890 anal operations at the Veteran's Hospital, Bronx, N.Y., unexpected lesions were found in 21 cases. These were five cases of carcinoma *in situ*, seven of squamous cell carcinoma, one of myoblastoma, three schistosomiasis, three nævi, one melanocarcinoma and one tuberculosis. This is an incidence of 1.1% of more or less serious lesions discovered in the examination of specimens removed at operations for hæmorrhoids, fissures and fistulæ.

Tissues that require excision also require microscopic examination. BURNS PLEWES

Protection of Colonic Anastomoses With Antibiotics.

I. COHN, JR. AND J. D. RIVES: *Ann. Surg.*, 144: 738, 1956.

Experiments were performed on dogs with a standardized end-to-end anastomosis of a devascularized loop of colon. The length of devascularized colon was such that with no preoperative preparation the procedure was uniformly fatal. It was shown that mechanical cleansing of the bowel by enemas and laxatives did not decrease the organisms in the colon. Postoperative antibiotic protection lengthened the survival time, and some dogs survived even if the colon had not been emptied. Preoperative preparation with Achromycin and neomycin reduced the mortality rate markedly. Postoperative intraluminal antibiotics give additional protection both experimentally and clinically. Antibiotics maintain the viability of devascularized colonic anastomosis and thus provide protection in strangulation obstruction. BURNS PLEWES

Experimental Hæmorrhage: Deleterious Effect of Hypothermia and a Comparative Evaluation of Plasma Volume Changes.

J. V. WILSON *et al.*: *Ann. Surg.*, 144: 696, 1956.

Severe sublethal hæmorrhagic shock was induced by rapid bleeding through an aortic cannula of 35% of the blood volume. As body temperature is lowered below 31° C. there is a diminution in tolerance from zero mortality at normal temperature to 82% below 26° C. After hæmorrhage, plasma volume rapidly increased by a fluid shift into the vessels (this occurs within 30 minutes) but lessened as body temperature was reduced. Plasma volume change and blood pressure changes were closely parallel. Plasma volume soon decreased, however, within one to three hours, by the loss of fluid from the vascular compartment, and blood pressure returned to normal during this period so that blood pressure did not appear to depend on plasma dilution. BURNS PLEWES

PÆDIATRICS

Copper Deficiency in Infants.

P. STURGEON AND C. BRUBACKER: *A.M.A. Am. J. Dis. Child.*, 92: 254, 1956.

Five cases are reported, in infants ranging from 6½ to 30 months of age, of a syndrome presenting with œdema and hypochromic anæmia, characterized by low serum copper, iron and protein contents.

The infants had all been on a largely milk diet and the authors believed that the condition was a deficiency state. Their opinion was strengthened since the condition was correctible by the addition of copper, iron and protein to the diet. Other known causes of hypocupræmia such as nephrosis, Wilson's disease and sprue were excluded.

The authors refer to similar but independent findings in five infants by Lahey and Schubert in Cincinnati recently reported to the Society for Pædiatric Research.

It is suggested that the condition has come to light owing to the development of new techniques for copper estimation, though the possibility is conceded that this may be a new syndrome. P. R. SWYER

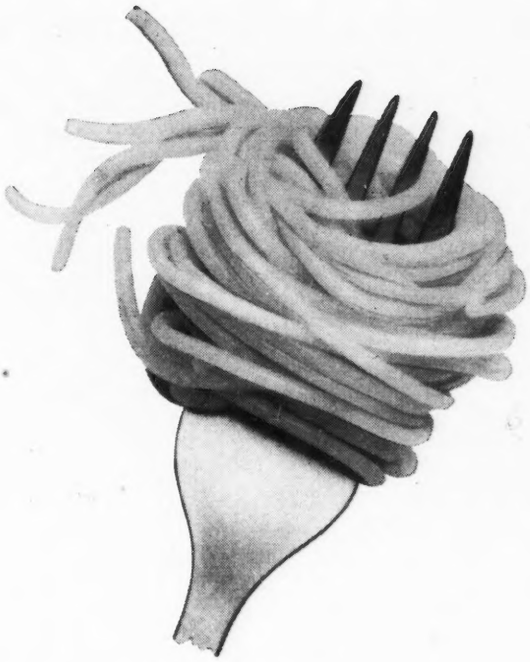
RADIOLOGY

Practical Value of the Posteroanterior Roentgenogram and Roentgenoscopy in Certain Types of Heart Disease.

A. J. BRUWER: *Am. J. Roentgenol.*, 76: 664, 1956.

This long article (29 pages) does not lend itself to adequate review. It is highly recommended as worthy of careful perusal by all physicians who have any interest in clinical cardiology. Fluoroscopy and chest films may rarely give an unequivocal diagnosis of the type of cardiac lesion existing in any individual patient, but such examinations are essential to adequate clinical investigation. The aim in cardiac fluoroscopy should be to make careful note of what is normal and what is abnormal, and to fit these findings in with the clinical picture, electrocardiography and any other indicated methods of investigation.

The author carefully discusses all the common cardiac conditions, the background of the study being the experience of the Mayo Clinic. NORMAN S. SKINNER



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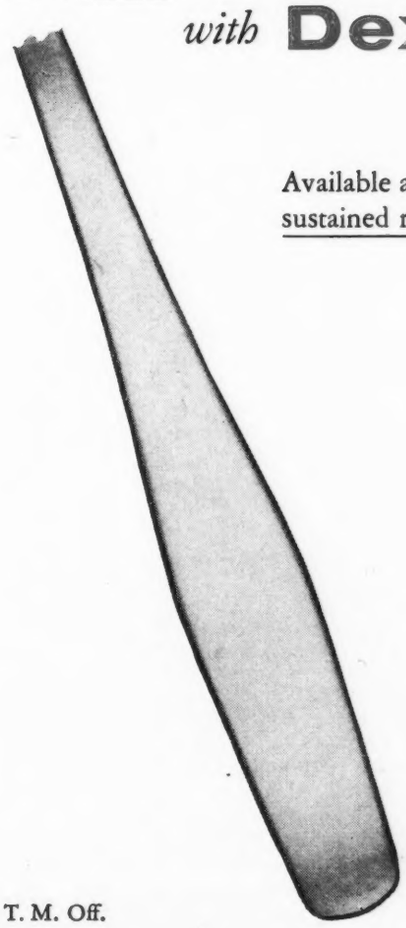

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PROVINCIAL NEWS

QUEBEC

Dr. Rankin K. Hay and Dr. Wallace J. Troup, of the Montreal General Hospital staff, have been named recipients of the first Crosbie bursaries, as announced by Senator Hartland deM. Molson, president of the Pioneer Endowment Fund. This fund for medical education is designed to train young men to become competent surgeons through international experience in university surgical centres. The bursaries are donated by Chesley A. Crosbie of Newfoundland and they will help the two doctors to continue postgraduate work—Dr. Hay in neurosurgery and Dr. Troup in cardiology in London, England.

During the past month there has been more than usual activity in the cancer field in the Montreal area. Sponsored by the Canadian Cancer Society and the C.M.A., a public panel discussion on cancer was held in the Mechanics Institute on February 6. Participating were Dr. Louis Charles Simard, president of the Montreal Cancer Institute, Dr. Harry Morton, chairman of the medical advisory board of the Canadian Cancer Society, Dr. M. N. Lougheed of the Montreal General Hospital, and Dr. J. P. Latour of the Royal Victoria Hospital. Time was presented as one of the best weapons medical science has in the fight against cancer. All emphasized the importance of periodic medical check-ups, combined with constant watch on the part of people themselves.

On February 5, Dr. Origène Dufresne, medical and scientific director of the Radium Institute of Montreal, addressed the Laurentian Optimist Club on the same subject. Pointing out that twice as many Canadians died of cancer during the war years as were killed or missing in action, he emphasized education of the public on the nature, causes, signs and treatment of cancer.

These public discussions and presentations certainly serve a very useful purpose of public education. Just now they may also give added impetus to the forthcoming drive for funds. The Cancer Research Society of Montreal will hold this year's campaign for $100,000 from March 26 to April 9. Donations are used for cancer research projects in Montreal and to help care for indigent cancer patients. The campaign chairmen for this year are Drs. Léon Gérin-Lajoie, A. D. Campbell and Alton Goldbloom.

At the monthly meeting of the Montreal Medico-Chirurgical Society held on February 15, Dr. Charles Huggins, professor of surgery at the University of Chicago, spoke on the endocrinological control of mammary cancer. George Loeb showed in 1916 that ovariectomy in mice lowered the incidence of mammary cancer in a strain with a natural high incidence. Other promising observations were also made after that, but these apparently received little attention until the late thirties. The greatest boost to the problem of mammary cancer has been the use of a chemical approach, and more particularly a chemical endocrine approach. A good deal of the talk was on experimental studies in animals. This excellent presentation brought out an exceptionally large audience.

Dr. Rachmiel Levine, chairman of the department of medicine at Michael Reese Hospital in Chicago, spoke to the Montreal Clinical Society at the Jewish General Hospital on February 27. He reviewed the findings of the conference recently held in New York on the use of sulfonamide derivatives in diabetes. Dr. Levine was chairman of this conference, sponsored by the New York Academy of Science.

Just about all the preparations for the annual meeting of our Division, to be held from May 2 to 4, at the Chantecler in Ste. Adèle, are now completed. In addition to timely scientific presentations, the afternoon of May 3 has been set aside for a joint business meeting and a meeting on medical economics. As in the past, the full meeting will be bilingual.

This past month the College of Physicians and Surgeons of the Province of Quebec advised all physicians on the Quebec Medical Register that plans are under way to re-write and re-enact the Quebec Medical Act. All were asked to submit, if they so desired, recommendations and suggestions. A good deal of study is being given to this.

A. H. NEUFELD

ONTARIO

Dr. Frederick Gordon Kergin has been appointed professor of surgery and head of the department in the University of Toronto. Dr. Kergin, a native of British Columbia, graduated from the University of Toronto with first-class honours, taking his B.A. in biological and medical sciences. Later he received an M.D. degree. Selected as a Rhodes scholar, he studied for three years at Oxford. During that period he did special work in surgery in London hospitals. A Fellow of the Royal College of Surgeons of England, he joined the University of Toronto medical faculty in 1937. He joined the RCAMC and served with the Army in England, North Africa, Italy, and Northwest Europe. At the end of the war he held the rank of lieutenant-colonel in charge of a division of surgery in a Canadian General Hospital. In 1953 he was the Hunterian Professor, Royal College of Surgeons, England. He is the author of articles on thoracic surgery.

The Atkinson Charitable Foundation has made a grant of $100,000 to the Toronto Western Hospital. The money is to be directed towards providing two new operating rooms for heart, brain and orthopædic surgery. Included in the equipment of these new rooms is a hypothermia unit.

Dr. J. C. Paterson, University of Western Ontario, spoke to the Toronto Diabetes Association on "Serum Lipids and Atherosclerosis". Dr. Paterson, at one time pathologist in Regina, is the only Canadian member of Dr. Paul White's atherosclerosis committee which meets at intervals in New York.

The Physiological Society of the University of Toronto was addressed by Dr. W. J. Linghorne on "The Maintenance and Repair of the Skeletal Tissues" and by Dr. J. F. Mustard on "Increased Activity of the Coagulation Mechanism during Alimentary Lipæmia".

Dr. Ida Kovacs, Hungarian-born doctor from Toronto, flew to Austria to serve as medical director of the Canadian Red Cross camp for refugees at Wiener Neustadt. She is sponsored and financed by the Canadian Medical Association as a contribution from the medical profession to Hungarian relief.

LILLIAN A. CHASE

MANITOBA

The Department of Pædiatrics, University of Manitoba, will present an institute on "Newborn and Premature Care" at the Medical College and the Children's Hospital, Winnipeg, on April 12 and 13. There is no fee for attendance but registration forms must be filled out. There will be one program for physicians and another for nurses. The guest speaker will be Professor Howell Wright, University of Chicago Medical School.

(Continued on page 598)

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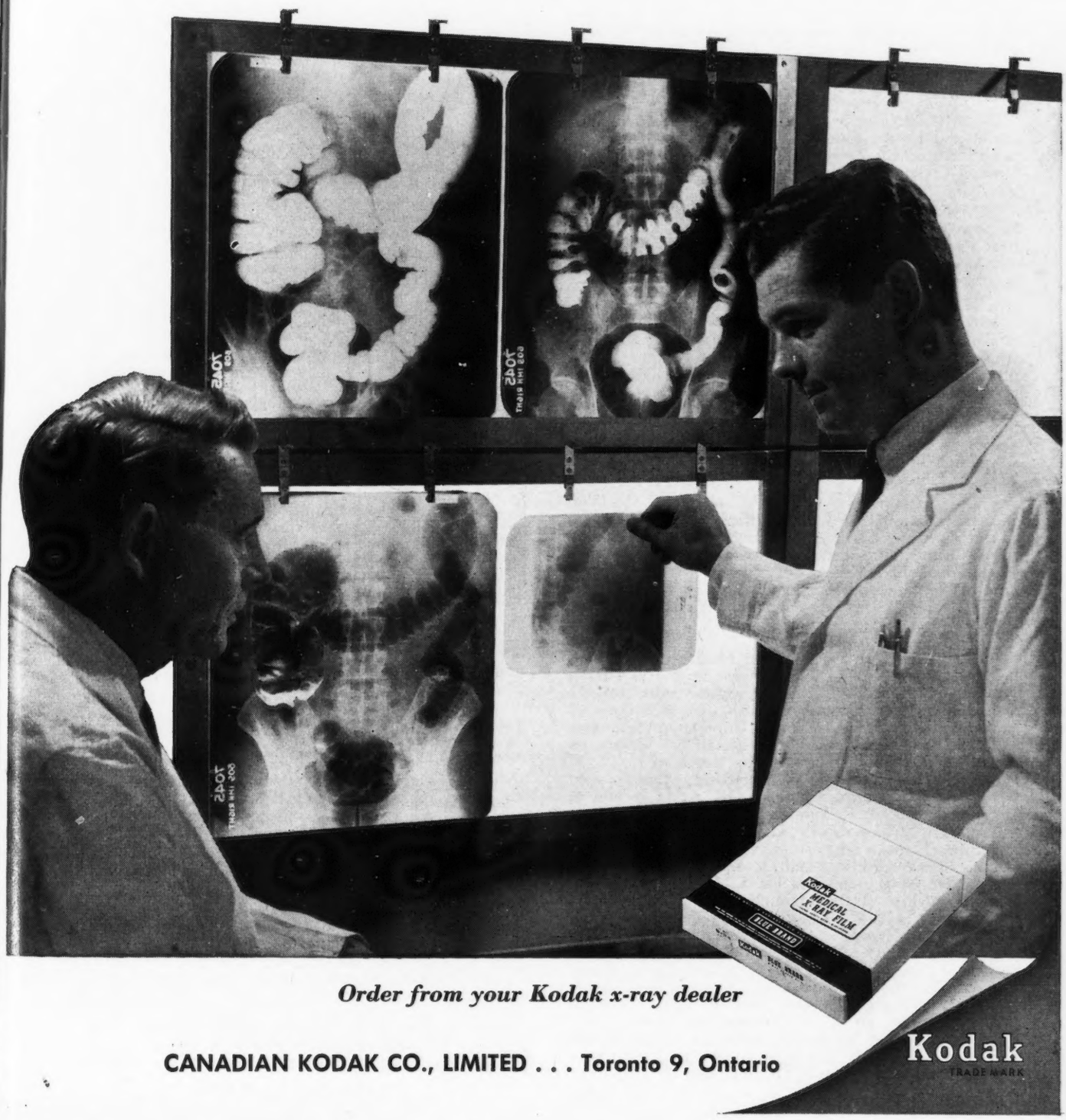

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At the annual meeting of the honorary attending staff of the Winnipeg General Hospital, Dr. R. A. Macpherson was named chairman of the medical executive committee, Dr. N. L. Elvin, vice-chairman, and Dr. Murray Campbell, secretary.

Blood transfusions were discussed at a meeting of the Manitoba Medico-Legal Society on February 26. The speakers were Dr. Bruce Chown and Mr. T. W. Laidlaw, Q.C.

Dr. Frank O. Wishart, Professor of Microbiology, School of Hygiene, University of Toronto, gave the annual Merck Lecture in the auditorium of the Medical College on March 1. His subject was "Immunization—Fantasy and Reality". His profound knowledge of immunization made his presentation memorable. He was introduced by Dr. Lennox Bell, Dean of the Faculty of Medicine, and Professor J. C. Wilt expressed the thanks of the audience.

Dr. K. C. Moore gave a talk on "Cytological sexing of nuclei and its application to errors of sexual development," before the Scientific Club of Winnipeg in the Medical College on February 12.

On February 13 at a meeting of the Medical History Section of the Winnipeg Medical Society, Dr. H. M. Ross read a paper on "Three medical men—pirate, soldier and saint." The three were Thomas Dover, William Beaumont (1785-1853) and David Livingstone.

Miss Josie Morgan, R.N., known to most of the doctors of Manitoba who have had occasion to visit the admitting office of the Winnipeg General Hospital, was presented with a purse and contents at a clinical luncheon in the hospital on February 21 on the occasion of her retirement. Dr. C. W. Burns made the presentation to "Josie", who assumed her duties in 1924 at the request of the late Dr. G. F. Stephens for one year and stayed for 33 years. Josie and Abou Ben Adhem were kindred spirits.

A bill was introduced in the Manitoba Legislature to amend the Chiropodists Act by restricting the use of the word "doctor". After debate the Legislature decided that the word might be used, but only with the qualifying term of "of Chiropody".

North of 53 District Medical Society

A meeting of the North of 53 Medical Society was held at Clearwater Lake Sanatorium near The Pas on February 13. Dr. S. L. Carey, superintendent of the Sanatorium, spoke on an outbreak of tuberculosis at Cranberry Portage in 1956. Visitors from Winnipeg were Dr. E. L. Ross, medical director of the Sanatorium Board of Manitoba, Dr. George Brock, Dr. C. B. Schoemperlen and Dr. M. T. Macfarland. Others present were Drs. J. Leicester, Chornomorets, A. L. Jacobs, S. Pogonowski and R. F. Yule of The Pas, and Drs. J. A. Killoh, C. A. Milanese and P. G. Premachuk of Flin Flon.

Dr. Brock spoke on the use of cortisone and corticosteroids in skin affections and Dr. Schoemperlen on lung abscess. Dr. Macfarland and Dr. Schoemperlen outlined current activities of the Manitoba Medical Association.

A feature of the meeting was the inspection of an igloo built by Eskimo patients waiting transfer to their homes.

After a reception at the home of Dr. Carey, dinner was served in the Sanatorium. At a short business session Dr. G. N. Willson, Flin Flon, was elected president of the Society and Dr. P. G. Premachuk secretary. The meeting adjourned to permit members to attend the Trappers Festival at The Pas. Later the guests were entertained at the home of Dr. and Mrs. A. L. Jacobs.

Ross Mitchell

BOOK REVIEWS

WELL CHILDREN. A Progress Report, 1953-55. The Institute of Child Study, University of Toronto. Edited by Mary L. Northway. 91 pp. Illust. University of Toronto Press, Toronto, 1956. $1.00.

This is an intelligently written and highly readable account of the research conducted at the Institute of Child Study, University of Toronto, over a period of two-and-a-half years. The chief goal of the Institute is to understand mental health, and in a preliminary chapter of the book it is pointed out that much of the available material on mental health assumes that this is the obverse of mental illness, so that the ideal in mental health has often been deduced from studies of sick persons. However, the staff of the Institute of Child Study believe that mental health can only become understood by observing mental healthiness as it exists. The task of the Institute is to discover what well children are like, to describe them and their functioning, to analyze the components of their makeup and to look for what is right in a child rather than what is wrong. Extraordinary as it may seem, the study of the well child is almost virgin soil. The authors of the book suggest that if more attention were given to mentally well persons, it might be possible to discover and foster the elements of wellness in mentally ill persons. A critical review is given of current concepts of mental health, such as freedom from pathology, the ideal personality, adjustment to society or normality in the statistical sense. The concept of mental health used at the Institute stems from its director's theory of security, in which it is stated that the individual is secure in so far as he is willing to accept the consequences of his own actions. The writers correctly draw attention to the difficulty experienced by psychologically orientated personnel in distinguishing well persons, when all their training is orientated towards distinguishing the mentally ill.

A general discussion of the plan adopted at the Institute is given and the development of the Institute's research program is outlined. The relative paucity of technical experts in the project staff is emphasized. Thus the results are not due to an isolated group of technically trained experts, but rather to a serious attempt by intelligent people who care for and about children to pool and record their knowledge. The research is designed as a longitudinal study. It is intended to observe the child from the age of two years old and to see what he becomes when he is 5, 10, 20, 50 and 80. This is done in the belief that a longitudinal study is the best means of understanding mental health. The children attending Toronto schools form the research population. Two types of projects have been carried out: those primarily related to schools, and those in which staff members have studied children in settings other than the schools. Brief outlines are given of some 52 projects carried out by staff members.

SCIENCE AND THE HUMANITIES. University College, London, Rickman Godlee Lecture, 1956. Gavin de Beer, British Museum. 21 pp. H. K. Lewis & Co. Ltd., London, 1956. 2s. 6d.

This delightful lecture was delivered at University College, London, England, on October 25, 1956. In it the lecturer remarks that the only man he had ever known who was equally at home in science and the humanities was D'Arcy Thompson, but it would appear from the talk that de Beer is equally at home in both worlds. He starts his lecture by showing that 18th century men like Johnson, Voltaire and Gibbon had more than a passing interest in science and may be said to have "warmed both hands before the fire of life", because of this double interest. In modern times the separation between science and the humanities has continued to grow, and the scientists have now erected their own Tower of Babel

(Continued on page 600)

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into which humanists find difficulty in penetrating. This separation has been associated with a separation between the two studies in the university. Now it is true that science and the humanities are essentially different in their outlook. Because of the lack of moral judgments in science, the scientist when he steps outside his own field into the world of human affairs is liable to display a distressing naivété. Nevertheless although the world is a scientific world, it is also a world of the humanities, for even the scientists are confronted with ethical problems and should know something of their nature and solution.

Mr. de Beer deprecates the modern tendency to separate science and humanities by precocious specialization. He foresees the time when a small child whose ability to talk or to walk is displayed unusually early will find itself channelled into a specialist course of life. Since he believes firmly that human development is associated with a long-drawn-out maturation, he regards the present tendency as regressive. While pointing out the foolishness of attempting to use scientific methods in investigating certain human problems, he shows how they can legitimately be used in solving, for example, some historical problems. The problem of origins or sources, which he dubs pothenology, may be so investigated. He illustrates this by his own studies on Hannibal's route across the Alps, the origin of the Etruscans and the origin of the gypsies.

The lecture is not just one of the tired old addresses of which we are all so sick; it combines profundity with sparkle, and can be read with profit by many and with entertainment by all.

REFRESHER COURSE FOR GENERAL PRACTITITIONERS. From the British Medical Journal, April 1952 to September 1953. Third Collection. 548 pp. Illust. British Medical Association, London, 1956. 25s.

"This is the third volume in the series which has been widely welcomed by physicians in both general and special practice. Here collected between two covers are articles now completely revised by their authors, which were published in the *British Medical Journal* in 1952 and 1953." These sentences from the preface of this book give a very fair survey of what it contains.

This volume and its two predecessors must be among the most valuable of the books which are now being prepared for the use of general practitioners. Of the 60 articles which this volume contains, there is not one but is of practical interest to the general practitioner. One or two which have reference to British law might be treated somewhat differently in this country, but the article on death certification can be studied with benefit by any Canadian practitioner.

Contributors to this volume have succeeded in presenting what is of vital interest to the busy practitioner and of leaving out the "textbook" details which encumber many medical works. Carcinoma of the breast, for instance, is reviewed in the compass of 12 pages. The possible causes are reviewed and the standard methods of diagnosis are competently stated and these are followed by a fair discussion of the three forms of treatment: surgery, radiotherapy and hormones. Counsel is given regarding complications of treatment, including the troublesome œdema of the arm, and some sage observations are made upon the last days of the patient with carcinoma of the breast.

Similar brief but adequate treatment is given to the other 59 subjects discussed in this book. It is in itself a fine refresher course for any general practitioner and well worth the modest Canadian equivalent of 25 shillings. The doctor who bought and read this book would certainly be a good prospect for the first and second volumes which precede it.

The physical composition of the book is excellent, as is usual with British publications. The printing is clear and the pages are uncrowded. There is an adequate index at the back of the book and a complete list of contents of the three volumes at the front of the book. The articles are written in lucid and free-flowing English which is a pleasure to read. This book can be heartily recommended to the general practitioners of Canada.

LYMPHATICS, LYMPH AND LYMPHOID TISSUE. Joseph Mendel Yoffey, University of Bristol, England, and Frederick Colin Courtice, Sydney Hospital, Australia. 510 pp. Illust. Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1956. $11.00.

Very few are the books encountered by this reviewer that he can recommend to everyone without reservation; this book is one of them. All physicians, whether they are engaged in active practice or research, should derive real profit and pleasure from it. Moreover, those who do not avail themselves of the opportunity of dipping into this fascinating and important volume will be the poorer for their neglect.

Nominally the second edition of the book that Dr. Yoffey published with C. K. Drinker in 1940, this book has retained only a superficial similarity to the earlier edition because of the numerous discoveries that have been made in the past 25 years—many by the late Dr. Drinker and by the present authors. Yoffey has been extremely fortunate in his choice of his new co-author; in fact, some of the sections by Courtice are particularly well written. Much of the book is a model of clear scientific prose that should appeal to the novice as well as the specialist.

Particularly delightful are the frequent important discoveries made by the reader of this book, especially if he has had only casual contact with the voluminous literature on the subject. Nonetheless the specialists too will be thankful for the enormous work of judicious sifting that has been done by the authors.

The chapter headings give a limited idea of the subjects covered: (1) General arrangement and organization of the lymphatic system; (2) The formation of lymph; (3) Physiological significance of regional lymphatics; (4) Lymph flow, lymph pressure and lymph composition; (5) Biological significance of lymphoid tissue; (6) Cell content of lymph; (7) The lymphocyte, and (8) Practical considerations. There are author and subject indices which appear to be very complete. If there are some faults, they are so overshadowed by the general excellence that it would be ridiculous to mention them.

ETIOLOGIC FACTORS IN RENAL LITHIASIS. Edited by Arthur J. Butt, Baptist Hospital, Pensacola, Florida. 401 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $13.75.

Progress in the management of renal lithiasis must be based on a better understanding of the etiological factors responsible for stone formation. For many years, an imbalance between the colloids and crystalloids in urine has been considered to be one of the exciting factors responsible for stone formation in the kidney. In recent years, interest has been revived in these physiochemical aspects pertaining to stone formation, and Dr. Butt has been in the foreground of this investigation. He was the first to observe that the administration of hyaluronidase often significantly influenced the character of urine in patients with renal stone. Dr. Butt is editor of the present book, and, along with 18 other experienced investigators, presents the several factors thought to be responsible in the etiology of renal stone.

The subject is completely covered, beginning with a consideration of the history of the etiological factors in renal lithiasis and ending with a chapter entitled "A method for stone analysis using the flame photometer for calcium". In the intervening chapters the many and varied predisposing factors responsible in stone formation are presented. These include a consideration of the metabolism of calcium and phosphorus, calcium oxalate, uric acid, cystine and sulfonamides. The roles played by obstruction, infection, Randall's plaques and geographic,

(Continued on page 603)

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*Moss, G.W.O., Waters, G.G., and Brown, M.H., Canadian Journal of Public Health, 1955, 46:142. The Efficacy of Tetanus Toxoid.

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racial and climatic factors are next considered in separate and complete chapters. The basic colloid-crystalloid aspects of renal stone formation are discussed under several headings, and Dr. Butt summarizes and emphasizes the material presented by providing a working hypothesis in a chapter entitled "Pathogenesis of renal lithiasis".

Important biochemical aspects are stressed throughout. While an imbalance in the colloid-crystalloid mechanism has not been universally accepted as a precipitating factor in urinary stone formation, nonetheless Dr. Butt and his associates have made a most worthwhile contribution by their research work on the etiology and management of renal stones. The book combines completeness and clarity with authority. An extensive bibliography, excellent photographic reproductions and drawings and clear printing add handsomely to the book. The book is unhesitatingly recommended to the urologist and anyone interested in renal lithiasis.

PELVIMETRY. H. Thoms, Emeritus Professor of Obstetrics and Gynecology, Yale University School of Medicine, New Haven, Connecticut. 120 pp. Illust. Paul B. Hoeber Inc., New York, 1956. $5.00.

The author states that the purpose of this book is to place before practitioners of obstetrics a practical description of variations and abnormalities of the bony pelvis in relation to labour, and to describe certain diagnostic procedures by which pelvic morphology and pelvic capacity can be ascertained.

In compiling papers for this book, references have been found to noteworthy contributions of other workers in this field. Several of the quotations are worthy of mention. For example, Rongy says, "Obstetrics is largely a mechanical art. Every case of labour is an engineering problem." Another quotation from the author is that "Roentgen techniques depict upper pelvic relationships, but the assessment of the lower pelvis, i.e. the outlet, can be gained satisfactorily by palpatory measures."

The book then deals with classifications based on Turner's work in 1885 (the index of the pelvic brim as a basis of classification): (1) dolichopellic (elongated); (2) mesatipellic (round); (3) brachypellic (oval); (4) platypellic (flat).

The author quotes different writers to emphasize the point that pelvimetry is a measure of the pelvic index only—an adjunct to the clinical evaluation of the case. He does stress that it is one of the more precise tests which can be made. Our greatest therapeutic weapon still, he concludes, is clinical experience.

The book then continues in a readable manner, to take each aspect, step by step, in short lucid chapters. Subjects include: meaning and accuracy of pelvic measurements, the important pelvic dimensions, development of the pelvis, influences of nutrition, details of x-ray techniques, a discussion of the pelvic abnormalities caused by disease, clinical significance of pelvic variations, and a single film screening survey.

On the whole, this book is well written and well put together, with clear, bold type and excellent illustrations.

It is recommended reading for all who participate in the conduct of a patient's labour, whether clinician or radiologist.

ANALYTICAL PATHOLOGY. Treatises in the Perspective of Biology, Chemistry and Physics. Edited by Robert C. Mellors, Cornell University Medical College. 477 pp. Illust. McGraw-Hill Book Company Inc., Toronto, 1957. $14.40.

This volume on the biology, biochemistry and pathology of cancer, the cardiovascular system (arteriosclerosis and hypertension), the kidney (inflammatory and vascular disease of the glomerulus), the liver (cholæmia, ascites and hæmorrhagic phenomena), the endocrine system (adenohypophysis), the hæmatopoietic system (macrocytic anæmias, abnormal hæmoglobins), and hypersensitivity (connective tissue) does exactly what it sets out to do. It gives the experimental and observational background and devotes little if any effort to the propaganda of unknown factors in the conditions listed. It is concerned with the treatment only in so far as the facts confirm it. It gives a firm basis on which to build changes in application. In a rapidly changing concept of medical thought, it will be worthwhile reading to see where ideas are reaching out for expression.

PRACTICAL PEDIATRIC DERMATOLOGY. Morris Leider, New York University Post-Graduate Medical School. 433 pp. Illust. C. V. Mosby Company, St. Louis, Mo., 1956. $10.50.

This is the first edition of a concise text aimed chiefly at the general practitioner and pædiatrician. The book is well organized with a plan preceding each chapter, a maximum of facts and observations, and little theory or excess verbiage.

The book consists of 413 pages, divided into 14 chapters on: basic science, principles of diagnosis and therapy, dermatoses due to physical causes, pyogenic causes, fungi, viruses, parasites, chronic infections, allergy, the relationship between cutaneous diseases and other organic disease, and lastly hereditary congenital dysplastic and neoplastic diseases. There are numerous tables to assist the inexperienced in diagnosis, and an excellent list of common prescriptions useful in therapy.

Several rather controversial statements are made by Dr. Leider. Firstly, the author does not believe that frost *per se* is responsible to any significant degree for cutaneous disease. Secondly, mentality and mental disturbances are not prime movers of other organic disease. Thirdly, Dr. Leider still advocates the use of boric acid compresses although he advises caution.

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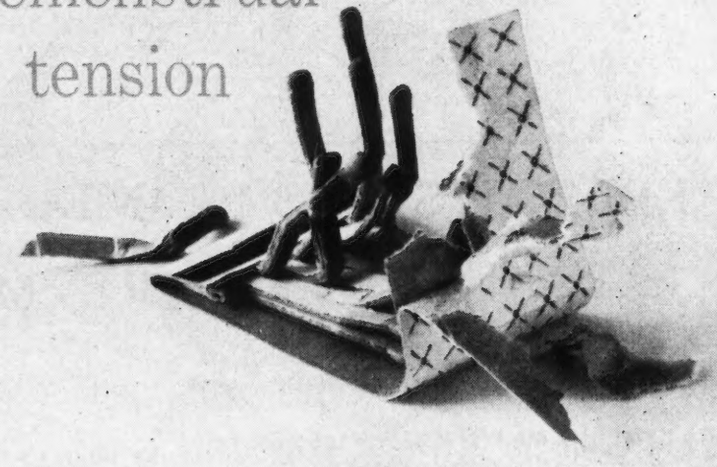

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MEDICAL NEWS *in brief*

(Continued from page 584)

RESERPINE IN LEUKÆMIA

Basing their reasoning on the fact that large doses of reserpine produce marked changes in the normal metabolic patterns, investigators at the Laboratory of Chemical Pharmacology, the National Cancer Institute and the National Institutes of Health, Bethesda, Maryland, tried the use of reserpine for the purpose of altering the metabolism of tumour cells. Hybrid male mice were inoculated with a suspension of leukæmic cells, and the disease was allowed to reach the systemic stage. The animals were then separated into an experimental group and a control group, and the experimental group received a single injection of reserpine. This produced an almost three-fold increase in the remaining lifetime of mice with advanced leukæmia. In addition, the growth of local tumours was also observed to be markedly checked in reserpine-treated mice. Preliminary reports show that frequent small doses may give better results than a single large dose of the drug. Chemical analogues of reserpine seem to possess similar anti-leukæmic activity. The mechanism through which this effect is achieved is still unknown. The authors conclude that even though reserpine has not been as effective an anti-leukæmic agent as amethopterin, it is nevertheless one of the very few drugs which increase the survival time of mice with advanced leukæmia L1210. — *Science*, 125: 156, 1957.

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DIABETES INSIPIDUS

In the February issue of the *Journal of Laboratory and Clinical Medicine* (49: 190, 1957) N. B. Lipsett and O. H. Pearson report studies of diabetes insipidus following hypophysectomy in man. Their findings are based on a series of 24 patients who were subjected to hypophysectomy for the control of metastatic carcinoma. These have been studied preoperatively and postoperatively while they were receiving cortisone and after full recovery from surgery. The point that these authors wish to make is that diabetes insipidus is not necessarily a clinically recognizable entity and that the daily water exchange in such patients may be within normal limits. The disease is essentially an inability of the kidney to elaborate concentrated urine following a deficiency of secretion of anti-diuretic hormone. The evaluation of what the authors call the ADH system is fraught with complications. However, in the absence of marked variations in glomerular filtration rates, the urine concentration reflects to a fair extent the action of ADH. Although the full effect of dehydration on the maximum capacity of the kidney to concentrate urine is not reached until 24 hours have passed without any

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—CASS, L.J., AND FREDERIK, W.S.: AM. J. GASTROENTEROL. (NOV.) 1956.

"Our results indicate that effective fecal softening is generally adequate to permit correction of chronic constipation of the spastic type."

—FRIEDMAN, M.: AM. PRACT. & DIGEST OF TREATMENT (OCT.) 1956.

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fluid intake, the patients were submitted to 10 hours' dehydration, which is all that hypophysectomized patients can support comfortably. As a result of these studies it appears that patients without a hypophysis can less easily defend their plasma osmolarity against water loss in periods of dehydration. This is shown by a high plasma osmolarity, although many such patients can elaborate urine which is hypertonic to the plasma under the stress of a moderate degree of dehydration. It has been recognized in the past that cortisone exerts a certain action on urine secretion. It appears from this study that the anorexia and nausea which accompany lack of cortisone prevent the patient from drinking adequate fluids and thus cause a mild state of dehydration. When cortisone is supplied, there is an increase in appetite leading to an osmotic load in the plasma and a decrease in osmolarity of the urine, both of which make for a certain degree of polyuria.

CLINICAL RESEARCH

"In the atonic group,...the simultaneous use of mild laxation [Doxinate with Danthron]...is preferred...."
—FRIEDMAN, M.: AM. PRACT. & DIGEST OF TREATMENT (OCT.) 1956.

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RESEARCH ON MULTIPLE SCLEROSIS

The Veterans' Administration of the United States, the National Research Council, and the National Institute of Neurological Diseases and Blindness and the National Institutes of Health have united in a project aimed at finding what role, if any, is played in the development and progress of multiple sclerosis by geographic, climatic and allied environmental factors. Since multiple sclerosis is more prevalent in the Northern United States and Canada than in the South, an effort will be made to determine whether veterans contracting the disease have benefited by a move to warmer climates. Investigators will also study data concerning physical characteristics and defects noted at enlistment, the degree of stress involved in the performance of military duties, race, occupation, and medical history of parents and other relatives. Dr. Benedict Nagler, Chief of the Neurology Division of the VA Central Office in Washington, D.C., is the principal investigator. His staff will include an epidemiologist, a statistician and two neurologists. Investigators expect to have available for study the records of 1000 cases in the armed forces and of more than 2000 cases involving veterans.

STENOSIS OF THE SPHINCTER OF ODDI

Surgeons have become increasingly aware that obstruction of the common bile duct of the sphincter of Oddi plays a significant part in causing recurrent biliary symptoms after removal of a gall-bladder. Recurrent attacks of severe pain in the right upper quadrant or epigastrium, with or without jaundice, may result from obstruction at the sphincter which is not due to a stone, pancreatitis or carci-

(Continued on page 47)

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(1) Dickson, R.M.: Brit. J. Ophth. 26:529, 1942.
(2) Collier, E.: Brit. J. Phys. Med. 6:181, 1943.
(3) Dickson, R.M.: Brit. J. Phys. Med. 7:77, 1944.
(4) Kuhn, H.S.: Tr. Am. Acad. Ophth. 55:431, 1951.

POST-GRADUATE COURSE IN SURGERY

Designed for candidates for the F.R.C.S.(C)

The Surgical Staff of the Royal Victoria Hospital are conducting the twelfth annual course in surgery designed especially for those wishing to write the F.R.C.S.(C) in November.

The course consists of two sections. The correspondence portion will commence on April 29th and will consist of selected reading with weekly written questions. The clinical and didactic full time course will be held at the Hospital commencing on August 5 and will last about six weeks.

All the required work will be presented by the various specialists and will consist of physiology, anatomy, pathology, X-ray, in association with general and special surgery.

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The Department of Psychiatry, McGill University, Montreal has a limited number of openings for training, and applications are now being considered for July 1st.

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MEDICAL NEWS *in brief*

(Continued from page 45)

noma of the ampulla or pancreas. In a recent paper (*New England J. Med.*, 256: 429, 1957) Cattell and his colleagues from Boston review 100 consecutive cases of partial or complete obstruction of the sphincter of Oddi operated on between October 1952 and January 1956. None of these patients had a pancreatitis or a pancreatic tumour. Intermittent pain was the commonest symptom and 46 patients were jaundiced or had a history of jaundice. Eighty-one had had a previous cholecystectomy which had failed to relieve symptoms. Liver function studies showed some abnormality and intravenous cholangiography was the most helpful preoperative investigation. At operation, 68 of the 100 patients had a dilated common duct and 38 had calculi in the duct. A firm contracture of the sphincter of Oddi was often encountered, the tissue surrounding the ampulla appearing hypertrophied. Evidence of pancreatitis was not common. The authors believe that partial obstruction of the common duct due to stenosis of the sphincter of Oddi may lead to development of stones in the common duct. Treatment of the condition is by transduodenal sphincterotomy, with or without implantation of a long-arm T tube.

EVALUATION OF HYPNOTIC DRUGS

A new method for the evaluation of hypnotic drugs is described in *Lancet* (1: 556, 1957) by Isaacs of Glasgow. It is based on the assumption that hypnotic drugs increase the resistance of the sleeping brain to arousal stimuli from the filling bladder. Just before retiring to bed, the patient swallows his drug, empties his bladder and drinks a large volume of water. Because of this "water load" much urine is secreted during sleep and the subject is sooner or later aroused by the discomfort of his full bladder. When this occurs, he notes the time and the volume of urine passed. With hypnotic drugs, waking is delayed and a larger volume of urine is voided on waking. The depth of sleep is assessed by the equation D=log t x log v, where D is mean depth of sleep, t the time in minutes from retiring to first waking, and v the volume of urine in c.c. passed on first waking. The author claims the following advantages for his method. Normal healthy students can be used, the tests can be performed at home, repeated tests with different drugs or doses can be used on the same subjects, no elaborate apparatus or observers are needed, the method is objective and free from bias, and only physiological stimuli are employed. The test cannot be carried out on patients who are actually needing hypnotic drugs and the method gives no information on the onset of action or duration of action. Obviously the drugs tested must not affect diuresis. In a further paper, Isaacs shows application of the method to the testing of glutethimide (Doriden) which he compared with a placebo and pentobarbitone. Subjective and objective appraisal in different healthy subjects led to the same conclusion, namely that glutethimide in a dose of 500 mg. was equivalent to pentobarbitone grains 1½ for hypnotic effect. The trial is claimed to support the validity of this method of assessing potency of hypnotic drugs.

WORK AND THE HEART

A medical conference on work and the heart will be conducted

(Continued on page 48)

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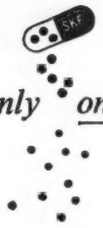

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*Reg. Can. T. M. Off.

MEDICAL NEWS *in brief*

(Continued from page 47)

at Marquette University, Milwaukee, on May 15-18. This, the First Wisconsin Conference on Work and the Heart, will be sponsored jointly by the Marquette University School of Medicine and the Wisconsin Heart Association. The theme of the conference is of course related to very practical problems, such as the employment of workers with heart disease and the effects of work on the normal and damaged heart. It is hoped at this conference to present a considered review, analysis and discussion of all available data related to the effect of work on the heart. In addition it is hoped to define fields which are still unknown. Cooperating in the conference will be the American Heart Association, the National Heart Institute and the Industrial Health Council of the American Medical Association. Post-conference publication of proceedings is planned.

The conference will be divided into five concurrent panels on basic physiology, clinical physiology, pathology, work classification and workmen's compensation. In each panel 10 to 12 participants will present brief summaries of papers submitted by them in advance and distributed in advance among the other panel members. There will then be a group discussion of the presentation. Reports from the various panels will be presented to the full conference. Panels include a distinguished list of American cardiologists and other specialists. Canadian participants include Dr. Alan C. Burton and Dr. J. C. Paterson of London, Ont., and Dr. John Hamilton, of Toronto.

—

FRACTURES OF THE UPPER END OF THE RADIUS

Fracture of the upper end of the radius is a common elbow injury; in children 15% of elbow injuries have been found to show an isolated fracture of the radial head, whereas in adults the incidence is 61%. The fracture is presumably caused by abduction of extended elbow joint and is commonly caused by a slip or fall, especially from a bicycle. Recommendations for treatment have varied widely in the past. Arner and his colleagues from Stockholm (*Acta chir. scandinav.*, 112: 115, 1956) have analyzed their results in a follow-up of 281 patients. Women predominated in the series, particularly in comminuted fractures, possibly because of the cubitus valgus position which is common in the female. The great majority of such fractures respond well to conservative therapy. They should be immobilized in a sling, to secure freedom from pain in the acute stage. When this is over, active movement should be started. Operation is rarely indicated, but should be used for fractures of the neck in which the head of the radius is displaced with deflection exceeding 15°, marginal fracture with appreciable crushing of the fragment and loose debris in the joint, and comminuted fracture with displacement of fragments. The fractured neck with displacement needs closed or open reduction followed by plaster immobilization for three to four weeks. An avulsed head should be excised in adults. A marginal fracture or comminuted fracture with displacement requires either removal of displaced fragments or excision of the entire radial head with brief postoperative immobilization.

—

PREVENTION OF SUICIDE

In November 1953, the rector of a city church in London, England, began a suicide prevention service. Through the national press he invited anyone in despair to use his telephone number as a sort of spiritual emergency call system. In *Lancet* (1: 584, 1956) he discusses the results. The telephone rings approximately 100 times a day and the work takes anything up to 100 hours a week, but no fewer than 650 troubled persons, of whom some 300 appeared to be potential suicides, were persuaded to come and discuss their problems, the commonest of which were lack of faith to live by, psychological disturbance, marital or other sexual maladjustment and loneliness in one of the world's most populous cities. Many offers of help in the work were also received. Only two of the clients have so far committed suicide, though another half dozen are still in danger of this. The author is convinced that many suicides can be prevented by a sympathetic listener and counsellor, though he realizes the heavy burden of responsibility until the sufferer has been per-

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Applications for these courses to commence in September, 1957, are now being accepted, and should be made to the Secretary, Faculty of Medicine, University of Toronto.

A year of attendance at these courses, provided the diploma is obtained, satisfies part of the requirements for the Certification or the Fellowship programmes of the Royal College of Physicians and Surgeons of Canada in the approved medical specialties.

There are many opportunities at the present time for a satisfying career in public health, or as a full-time or part-time industrial physician or surgeon.

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A two year course is offered leading to the Diploma in Hospital Administration, for those interested in administrative medicine.

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For further information write to:

Dr. A. J. Rhodes,
Director,
School of Hygiene,
University of Toronto,
Toronto, Ontario.

suaded to obtain a qualified opinion. Similar work is being done in Berlin, where a psychiatrist who is also a Lutheran pastor is in charge, and in Sweden. The author suggests that in any newly formed branch of "Samaritans" an active part would need to be taken by a clergyman who did not regard clients as conversion-fodder, a psychiatrist who took people's spiritual needs seriously, a lay psychotherapist working under medical supervision, a marriage guidance expert, a social worker and a lawyer. These experts would need the help of a devoted band of people (of all religious faiths and none) to do that most vital work without which all the rest may be in vain, and which we call "befriending".

—

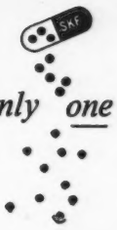
NOVOBIOCIN THERAPY OF PYOGENIC SURGICAL INFECTIONS

Novobiocin is an antibiotic isolated from cultures of Streptomyces species and given the trade names of Albamycin and Cathomycin. Pulaski and Isokane (*Surg., Gynec. & Obst.*, 104: 310, 1957) have studied its bacteriological and clinical properties in 106 patients in hospital with a variety of pyogenic surgical infections. *In vitro* studies showed that novobiocin was highly active on all but three of 216 strains of staphylococci of human origin, and on the majority of other Gram-positive cocci, though relatively ineffective on most Gram-negative bacilli. The authors confirm that *in vitro* activity on staphylococci is reduced five to 10 times in the presence of serum.

They gave novobiocin by mouth in divided daily doses of 1, 1.5 or 2 g. daily and this dose was well tolerated by 48 of the 106 patients who received it for six days or less. Out of 58 others who had treatment for a longer time, nine developed a generalized itching maculopapular rash which disappeared after therapy stopped. Divided daily doses of 1.5 g. for severe infections and 1.0 g. for milder infections appeared sufficient. Clinical results were favourable in approximately three-quarters of the cases, the nature of response being similar to that with

(Continued on page 50)

smooth, day-long sedation for the hyperactive child



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Am. J. M. Sc. 229:22, 1955

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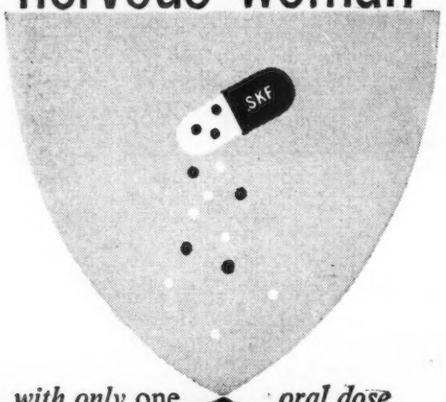
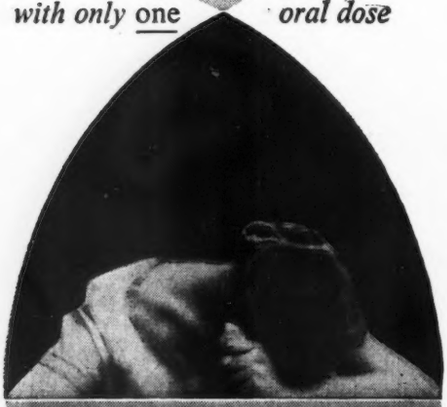
Smooth, day-long sedation for the tense and nervous woman



with only one *oral dose*



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MEDICAL NEWS *in brief*

(Continued from page 49)

older antibiotics. In two cases in which healing did not occur, a novobiocin-resistant organism emerged. The authors are concerned lest unrestricted use of novobiocin should eventually lead to the same resistance pattern as with older antibiotics. Novobiocin should be reserved for use solely in staphylococcal infections due to organisms resistant to other antibiotics. It should not be allowed to delay proper surgical intervention to clear out pus. Once a clean granulating cavity has been obtained, antibiotics are useless. In chronic infections, novobiocin is also ineffective.

—

RETROGRADE PERFUSION OF THE CORONARY SINUS

Gott and his colleagues from Minneapolis (*Surg., Gynec. & Obst.*, 104: 319, 1957) report studies in dogs and human subjects of retrograde perfusion of oxygenated blood via the coronary sinus. They by-passed the heart and lungs and used a pump oxygenator to furnish blood to the cannulated coronary sinus. Such perfusion permitted work on the open ascending aorta or coronary arteries for periods of up to 20 minutes in the dogs. After this the right heart became increasingly cyanotic, but it may be possible to prolong survival further by causing cardiac asystole by potassium citrate or prostigmine. The method of retrograde perfusion via the coronary sinus was tested in seven clinical cases, and appeared to protect the myocardium well against anoxia and coronary air embolism during repair of aortic stenosis and regurgitation, ruptured sinus of Valsalva, aortic-pulmonary septal defect and complete transposition of great vessels. The human heart apparently responds well to this altered environment for up to 15 minutes.

—

SYMPOSIUM FOR GENERAL PRACTITIONERS

The Sixth Annual Symposium for General Practitioners on Tuberculosis and other Chronic Pulmonary Diseases will be held at Saranac Lake, New York, from July 8 to 12, 1957. It is approved for 26 hours of formal credit for members of the American Academy of General Practice. Many sessions are informal panel discussions with ample opportunity for questions from the audience. Free bus transportation will be provided to the various meeting places for the doctors attending the course. Excellent housing accommodations are available at and around Saranac Lake.

The registration fee for the Symposium is $40. Further information and copies of the program may be obtained from Dr. Henry W. Leetch, General Chairman, Symposium for General Practitioners, P.O. Box 11, Saranac Lake, N.Y.

—

RENAL FUNCTION TESTS

The so-called routine urinalysis is based on the determination of the specific gravity, the search for albumin and sugar, and examination of a drop or two of urine under the microscope. The absence of albumin is by far the most commonly used criterion of normality. Even though the persistent presence of albumin is a sure sign of disturbed renal function, absence of albumin does not necessarily exonerate the kidney from any lesion. In a recent article on the subject[1] evidence was offered that histologically appreciable structural alterations may be present in a kidney without any detectable perturbations in the standard function tests. Most of these tests do not offer any degree of reliability in diagnosis until moderately severe lesions have developed in the renal parenchyma. Yet a "battery" of these tests may offer somewhat better means of detection than any single test of this group used independently. As in any other such evaluation a thorough knowledge of the variations encountered in the normal control must be secured. These are influenced by starvation, unbalanced diet, strenuous physical exercise and exposure to cold, among other factors.[2] It is therefore recommended that the diet, environment and activity of patients whose renal function is being appraised, be closely controlled. The experience gathered so far from

(Continued on page 55)

MEDICAL NEWS *in brief*

(Continued from page 50)

percutaneous renal biopsies holds promise of making diagnosis possible earlier in the course of renal diseases.

REFERENCES

1. KACK, R. M. *et al.*: *A.M.A. Arch. Int. Med.*, **69**: 176, 1957.
2. SARGENT, F. AND JOHNSON, R. E.: *Ibid.*, **69**: 190, 1957.

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HEALTH EDUCATION CONFERENCES IN BRITAIN

The Central Council for Health Education in the United Kingdom announces two international study conferences in health education which it has arranged this spring and summer. The first is a seminar for public health workers overseas on the principles, methods and media of health education, to be held from April 15-19. The second is a summer school in health education. The subject to be dealt with is the promotion of health and the techniques of health education, and the school will run from August 20-30, 1957. The fee for tuition and full residence is £21, and this is a working conference for doctors, nurses, health inspectors, teachers and auxiliary health and social welfare workers from various fields in different countries. It will deal with the new content of health education, community attitudes and motivation, effective methods of group and community education, and evaluation of results. There will be an intensive practical course in the production and use of teaching materials with demonstrations of their adaptation to local conditions. Further information from the Medical Director, Dr. John Burton, Central Council for Health Education, Tavistock House North, Tavistock Square, London, W.C.1, England.

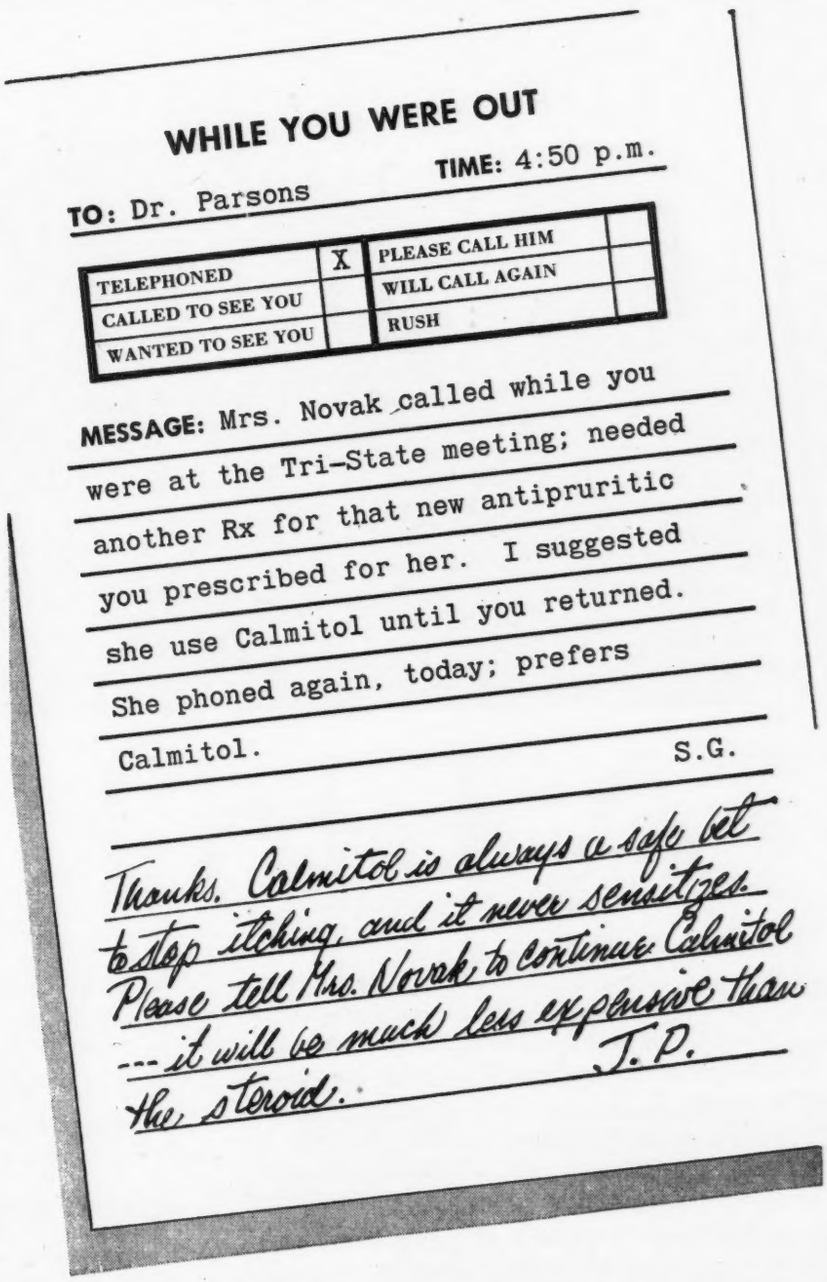
—

CRISIS IN THE U.K.

On March 12 the Prime Minister of Britain announced the names of those who were to sit on the Royal Commission on Remuneration of Physicians. The Chairman will be Sir Harry Pilkington, a company director, and other members include an actuary, a professor of economic organization, the headmaster of a high school, a professor of law and the secretary of a trade union. As an interim adjustment, the Prime Minister announced that the pay of junior hospital and medical and dental staff in the United Kingdom, up to and including the grade of senior registrar, will be increased by 10% from April 1. "We are also considering," he added, "what should be done by way of interim adjustment for other doctors and dentists covered by the Commission's terms of reference. I shall make a further statement on this matter in due course."

The terms of reference of the Royal Commission are as follows: to consider (1) how the levels of professional remuneration from all sources now received by doctors and dentists in the N.H.S. compare with the remuneration received by members of other professions, by other members of the medical and dental professions and by people engaged in connected occupations; (2) what in the light of the foregoing should be the proper current level of remuneration of doctors in the N.H.S.; (3) whether, and if so what, arrangements should be made to keep that remuneration under review, and to make recommendations.

(Continued on page 58)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TO: Dr. Parsons
TIME: 4:50 p.m.
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CALLED TO SEE YOU
WANTED TO SEE YOU
PLEASE CALL HIM
WILL CALL AGAIN
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MESSAGE: Mrs. Novak called while you were at the Tri-State meeting; needed another Rx for that new antipruritic you prescribed for her. I suggested she use Calmitol until you returned. She phoned again, today; prefers Calmitol.
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Thanks. Calmitol is always a safe bet to stop itching, and it never sensitizes. Please tell Mrs. Novak to continue Calmitol --- it will be much less expensive than the steroid.
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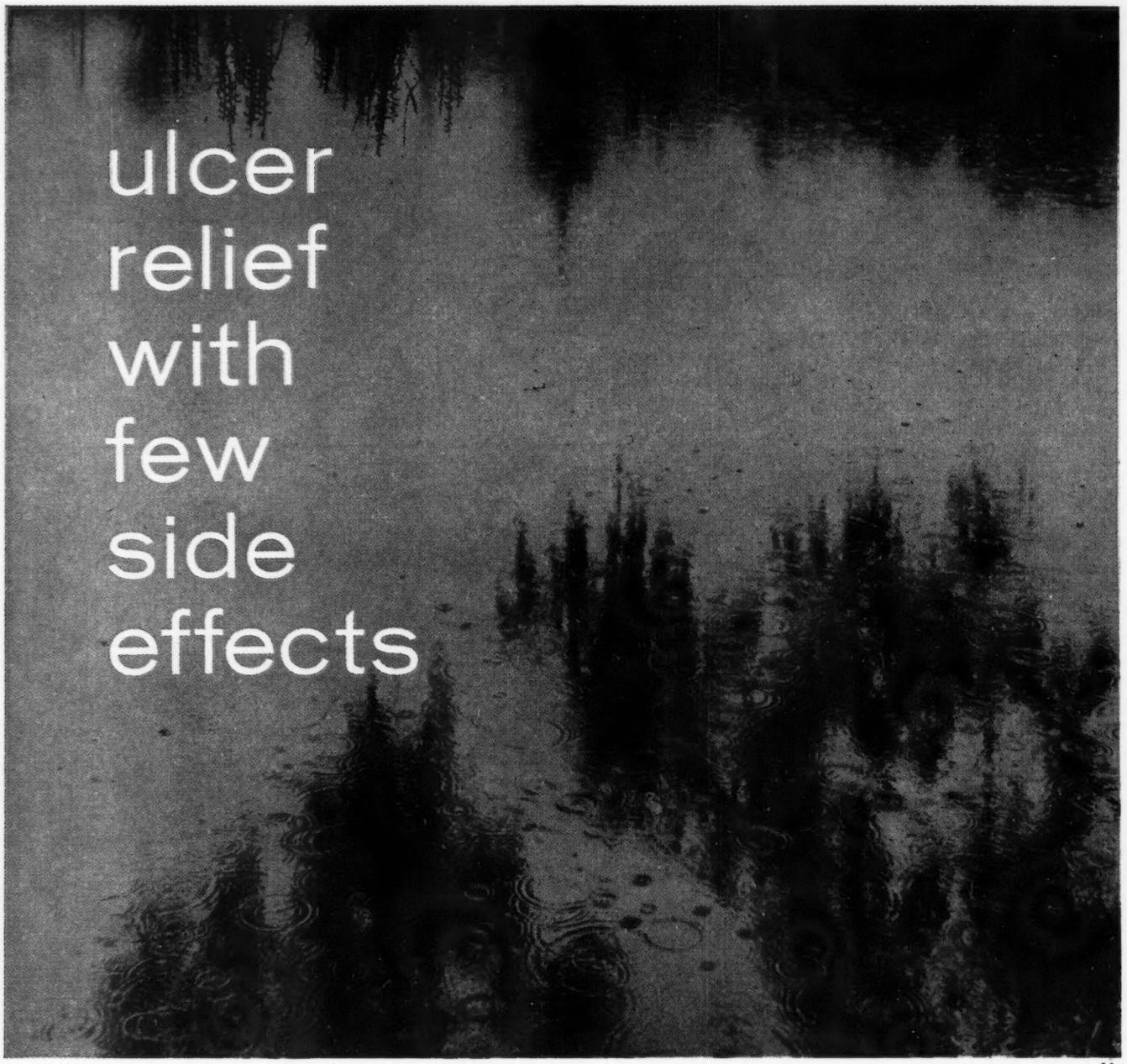

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PATHILON is particularly useful in ulcer treatment because its peripheral atropine-like actions are associated with few side effects.[1] Side effects, if any, are usually not severe enough to warrant discontinuance of the drug.[2]

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Available in three forms; *tablets* of 25 mg., plain (Pink) or with phenobarbital, 15 mg. (Blue), and *parenteral*, 10 mg./cc.—1 cc. ampuls.

1. *Evaluation of Drugs in the Treatment of Peptic Ulcer* by J. M. Ruffin, M.D.; D. Cayer, M.D.; J. S. Atwater, M.D., and B. G. Oren, M.D.: Exhibit at A.M.A. Meeting, Atlantic City, June, 1955.
2. Council on Pharmacy and Chemistry: *J.A.M.A.* 160:389 (Feb. 4) 1956.
3. Council on Pharmacy and Chemistry: *ibid.*

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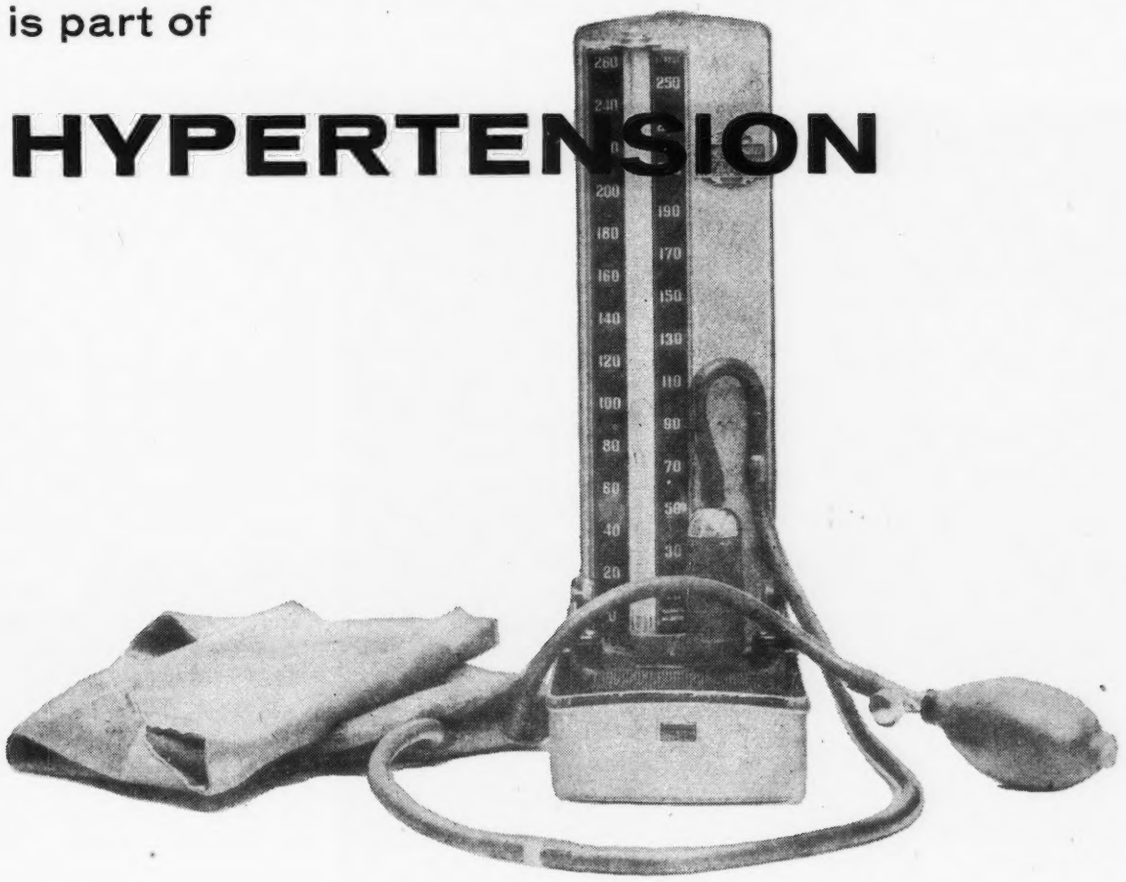

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MEDICAL NEWS *in brief*

(Continued from page 55)

GUIGOZ FELLOWSHIP FOR STUDY ON NUTRITION

A jury appointed by the International Children's Centre—(ICC)—Paris, will award next June the Guigoz fellowship for a study on nutrition, amounting to one million French francs. The fellowship was founded in 1956 by the Guigoz Company of Dietetic Products (Switzerland) to enable a nutritionist or a physician to devote one year to research work in Paris on feeding or nutrition of infants and children. *Applications for the 1957 fellowship must be filed not later than May 15, 1957.* Applicants are required to send to the International Children's Centre, Château de Longchamp, Bois de Boulogne, Paris 16è, France:

(a) *A curriculum vitæ* mentioning their work on biological and social problems, pertaining to the feeding or nutrition of infants and children; (b) *a letter of introduction* from one of their masters; (c) *an outline of the studies* which they wish to engage in with the help of the Guigoz fellowship. Applicants must have an adequate command of the French language.

In the anemia of pregnancy....

"The combined use of iron and cobalt [Roncovite] produces better clinical results, apparently by maintaining normal marrow function and by supplying adequate amounts of iron."*

*Holly, R.G.: Iron and Cobalt in Pregnancy, Obst. & Gynec. (Mar.) 1957.

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BAHAMAS MEDICAL CONFERENCE

The next Bahamas Medical Conference will take place April 23-30, 1957, at the British Colonial Hotel, Nassau, Bahamas. The program begins on April 23 with a talk by W. H. Seegers of Wayne State University College of Medicine, Detroit, on blood coagulation. On April 24 there will be sessions on mercurial diuretics by C. A. Handley and J. H. Moyer of Baylor University College of Medicine, Houston, Texas, and on hypertension. On April 25 J. H. Moyer and Marvin Moser (White Plains, N.Y.) will discuss hypertensive emergencies and therapy of heart failure respectively; C. A. Handley will deal with anti-emetic agents and N. B. Eddy (U.S. Public Health Service) will describe new developments in analgesia. On April 26, L. Unger (Wesley Memorial Hospital, Chicago) will speak on migraine; C. P. Lamar (University of Miami) on carbohydrate metabolism and endocrine therapy of breast cancer; P. R. Rezek (University of Miami) on hypophysectomy in breast cancer; and C. D. Guerrero (University of Mexico) on surgery in female sterility. On April 27 there are lectures by D. W. Smith (University of Miami) and A. J. Vorwald (Wayne State University) on surgical management of gastric lesions and on lung cancer respectively. On April 28 E. Irvin (Medical Director, Ford Motor Co.) speaks on the heart and occupation and on April 29 there are talks on bronchial asthma, cardio-pulmonary disease related to occupation, and addiction. The meeting concludes with a general discussion on April 30. Enquiries to Bahamas Medical Conference, P.O. Box 148, British Colonial Hotel, Nassau, Bahamas.

CONVERSION FACTORS

A wall chart has been received from the Precision Equipment Co., 3666 Milwaukee Avenue, Chicago

(Continued on page 60)

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- remains up to eight hours
- almost exclusively in the plasma
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0.5 gram sulfaethylthiodiazole
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MEDICAL NEWS *in brief*

(Continued from page 58)

41, Illinois. It contains a reference table of conversion factors for engineers and other executives. Included in this are many conversions which are commonly made in laboratories and scientific executive offices, such as conversions from kilograms to pounds, inches of water to inches of mercury, metres per minute to cubic feet per second, and apothecaries' measures to metric measures. This will be a handy little chart for the laboratory or office wall.

—

LEDERLE MEDICAL STUDENT RESEARCH FELLOWSHIPS

The Lederle Laboratories Division of the American Cyanamid Company announces that it is making available to medical schools throughout the United States and Canada "Lederle Medical Student Research Fellowships" for the year 1957.

These Fellowships, in amounts not exceeding $600 per year for any one individual, are intended to relieve in part the financial burden of students who desire to devote their summer vacations to research in the basic (preclinical) medical sciences.

Students who apply for Lederle Medical Student Research Fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school, or by the regularly constituted committee of the faculty charged with such selections.

By special permission of the dean or the Fellowship Committee of the school, the student may carry on such research in another medical school provided that satisfactory arrangements are previously made with the faculty member of the school and the department in which the student is to carry on his research.

—

USE OF RADIOLOGY IN PLACENTA PRÆVIA

Lindsey and Davidson of Edinburgh (*J. Obst. & Gynæc. Brit. Emp.*, 63: 878, 1956) have completed a four-year follow-up and review of all cases x-rayed for possible placenta prævia in the Simpson Memorial Maternity Pavilion, Edinburgh. The technique adopted in this department is based entirely on straight radiography with the fetus acting as a contrast medium. Views are taken with the patient in such a position that the fetus is above the suspected soft tissue shadow. Sources of error such as full bladder, full rectum, and soft tissue masses (fibroids or ovarian cysts) must be excluded.

Results of the survey suggest that placenta prævia can be diagnosed with accuracy at an estimated duration of pregnancy of 32 weeks or over. Results showed nearly 100% accuracy in excluding placenta prævia. Uncomplicated Type II, III or IV placenta prævia was diagnosed with a high degree of accuracy. The findings were uncertain in Type I placenta prævia or in the presence of malpresentation, hydramnios, small or deformed fetus, and uterine tumour.

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